

SOL005 - NS Lifecycle Management Interface

Overview

SOL005 - NS Lifecycle Management Interface IMPORTANT: Please note that this file might be not aligned to the current version of the ETSI Group Specification it refers to and has not been approved by the ETSI NFV ISG. In case of discrepancies the published ETSI Group Specification takes precedence. Please report bugs to <https://forge.etsi.org/bugzilla/buglist.cgi?component=Nfv-Openapis>

Version information

Version : 1.1.0-impl:etsi.org:ETSI_NFV_OpenAPI:2

Contact information

Contact : NFV-SOL WG

License information

License : ETSI Forge copyright notice

License URL : <https://forge.etsi.org/etsi-forge-copyright-notice.txt>

Terms of service : null

URI scheme

BasePath : /nslcm/v1

Schemes : HTTP, HTTPS

Consumes

- `application/json`

Produces

- `application/json`

External Docs

Description : ETSI GS NFV-SOL 005 V2.5.1

URL : https://www.etsi.org/deliver/etsi_gs/NFV-SOL/001_099/005/02.05.01_60/gs_NFV-

Paths

Retrieve API version information

GET /api-versions

Description

The GET method reads API version information. This method shall follow the provisions specified in table 4.6.3.3.2-1 for request and response data structures, and response codes. URI query parameters are not supported.

Parameters

| Type | Name | Description | Schema |
|--------|-----------------------------------|--|--------|
| Header | Version <i>optional</i> | Version of the API requested to use when responding to this request. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 200 | API version information was read successfully. The response body shall contain 4.4 API version information, as defined in clause 4.4.1.13. Headers : Content-Type (string) : The MIME type of the body of the response. Version (string) : The used API version. | Response 200 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be properly specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 413 | <p>413 PAYLOAD TOO LARGE If the payload body of a request is larger than the amount of data the API producer is willing or able to process, it shall respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for closing the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 413 |
| 414 | <p>414 URI TOO LONG If the request URI of a request is longer than the API producer is willing or able to process, it shall respond with this response code. This condition can e.g. be caused by passing long queries in the request URI of a GET request. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 414 |
| 416 | <p>416 RANGE NOT SATISFIABLE</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 416 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 422 | <p>422 UNPROCESSABLE ENTITY If the payload body of a request contains syntactically correct data (e.g. well-formed JSON) but the data cannot be processed (e.g. because it fails validation against a schema), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. This error response code is only applicable for methods that have a request body.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 422 |
| 429 | <p>429 TOO MANY REQUESTS If the API consumer has sent too many requests in a defined period of time and the API producer is able to detect that condition ("rate limiting"), the API producer shall respond with this response code, following the provisions in IETF RFC 6585 [17] for the use of the "Retry-After" HTTP header. The "ProblemDetails" structure shall be provided and shall include in the "detail" attribute more information about the source of the problem. The period of time and allowed number of requests are configured within the API producer by means outside the scope of the present document.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 429 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |
| 504 | <p>504 GATEWAY TIMEOUT If the API producer encounters a timeout while waiting for a response from an upstream server (i.e. a server that the API producer communicates with when fulfilling a request), it should respond with this response code.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 504 |

Response 200

| Name | Description | Schema |
|---------------------------------------|---|--|
| apiVersions <i>required</i> | Version(s) supported for the API signalled by the uriPrefix attribute. | < apiVersions > array |
| uriPrefix <i>required</i> | Specifies the URI prefix for the API, in the following form {apiRoot}/{apiName}/{apiMajorVersion}/. | string |

apiVersions

| Name | Description | Schema |
|--|--|---------|
| isDeprecated <i>optional</i> | The Boolean is a data type having two values (TRUE and FALSE). | boolean |
| version <i>required</i> | Identifies a supported version. The value of the version attribute shall be a version identifier as specified in clause 4.6.1. | string |

Response 400

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 413

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 414

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 416

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 422

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 429

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 504

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Create a NS instance resource.

```
POST /ns_instances
```

Description

The POST method creates a new NS instance resource.

Parameters

| Type | Name | Description | Schema |
|--------|---|--|----------------------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235. | string |
| Header | Content-Type <i>required</i> | The MIME type of the body of the request. Reference: IETF RFC 7231 | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Body | body <i>required</i> | The NS creation parameters, as defined in clause 6.5.2.7. | body |

body

| Name | Description | Schema |
|---|--|--------|
| nsDescription <i>required</i> | Human-readable description of the NS instance to be created. | string |
| nsName <i>required</i> | Human-readable name of the NS instance to be created. | string |
| nsdId <i>required</i> | An identifier with the intention of being globally unique. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|--|--------------|
| 201 | <p>201 Created A NS Instance identifier was created successfully. The response body shall contain a representation of the created NS instance, as defined in clause 6.5.2.8. The HTTP response shall include a "Location" HTTP header that contains the resource URI of the created NS instance.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response. This header field shall be present if the response has a non-empty message body.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 201 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 416 | <p>416 RANGE NOT SATISFIABLE</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 416 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 201

| Name | Description | Schema |
|--|---|--|
| _links <i>required</i> | Links to resources related to this resource. | _links |
| additionalAffinityOrAntiAffinityRule <i>optional</i> | Information on the additional affinity or anti-affinity rule from NS instantiation operation. Shall not conflict with rules already specified in the NSD. | < additionalAffinityOrAntiAffinityRule > array |
| flavourId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| monitoringParameter <i>optional</i> | Performance metrics tracked by the NFVO (e.g. for auto-scaling purposes) as identified by the NS designer in the NSD. | < monitoringParameter > array |
| nestedNsInstanceId <i>optional</i> | Identifier of the nested NS(s) of the NS instance. | < string > array |
| nsInstanceDescription <i>required</i> | Human readable description of the NS instance. | string |

| Name | Description | Schema |
|---|---|---|
| nsInstanceName <i>required</i> | Human readable name of the NS instance. | string |
| nsScaleStatus <i>optional</i> | Status of each NS scaling aspect declared in the applicable DF, how "big" the NS instance has been scaled w.r.t. that aspect. This attribute shall be present if the nsState attribute value is INSTANTIATED. | < nsScaleStatus > array |
| nsState <i>required</i> | The state of the NS instance. Permitted values: NOT_INSTANTIATED: The NS instance is terminated or not instantiated. INSTANTIATED: The NS instance is instantiated. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| nsdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfInfo <i>optional</i> | Information on the PNF(s) that are part of the NS instance. | < pnfInfo > array |
| sapInfo <i>optional</i> | Information on the SAP(s) of the NS instance. | < sapInfo > array |
| virtualLinkInfo <i>optional</i> | Information on the VL(s) of the NS instance. This attribute shall be present if the nsState attribute value is INSTANTIATED and if the NS instance has specified connectivity. | < virtualLinkInfo > array |
| vnfInstance <i>optional</i> | Information on constituent VNF(s) of the NS instance. | < vnfInstance > array |
| vnffgInfo <i>optional</i> | Information on the VNFFG(s) of the NS instance. | < vnffgInfo > array |

links

| Name | Description | Schema |
|--------------------------------|--|----------------------|
| heal <i>optional</i> | This type represents a link to a resource. | heal |

| Name | Description | Schema |
|---|--|---|
| instantiate <i>optional</i> | This type represents a link to a resource. | instantiate |
| nestedNsInstances <i>optional</i> | Links to resources related to this notification. | < nestedNsInstances > array |
| scale <i>optional</i> | This type represents a link to a resource. | scale |
| self <i>required</i> | This type represents a link to a resource. | self |
| terminate <i>optional</i> | This type represents a link to a resource. | terminate |
| update <i>optional</i> | This type represents a link to a resource. | update |

heal

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

instantiate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

nestedNsInstances

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

scale

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

terminate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

update

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

additionalAffinityOrAntiAffinityRule

| Name | Description | Schema |
|--|---|--|
| affinityOrAntiAffinity <i>required</i> | The type of the constraint. Permitted values: AFFINITY, ANTI_AFFINITY. | enum (AFFINITY, ANTI_AFFINITY) |
| scope <i>required</i> | Specifies the scope of the rule where the placement constraint applies. Permitted values: NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE. | enum (NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE) |
| vnfInstanceId <i>optional</i> | Reference to the existing VNF instance as the subject of the affinity or anti-affinity rule. The existing VNF instance is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfProfileId <i>optional</i> | Reference to a vnfProfile defined in the NSD. At least one VnfProfile which is used to instantiate VNF for the NS to be instantiated as the subject of the affinity or anti-affinity rule shall be present. When the VnfProfile which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VnfProfile presents is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfdId <i>optional</i> | Reference to a VNFD. When the VNFD which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VNFD presents is not necessary as a part of the NS to be instantiated. | < string > array |

monitoringParameter

| Name | Description | Schema |
|---|--|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the NSD. | string |
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

nsScaleStatus

| Name | Description | Schema |
|---|--|--------|
| nsScaleLevelId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsScalingAspectId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

pnfInfo

| Name | Description | Schema |
|--|---|------------------------|
| cpInfo <i>optional</i> | This type represents the information about the external CP of the PNF. It shall comply with the provisions defined in Table 6.5.3.17-1. | cpInfo |
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfName <i>optional</i> | Name of the PNF. | string |
| pnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| pnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |

cpInfo

| Name | Description | Schema |
|--|---|---|
| cpInstanceId <i>required</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| cpProtocolData <i>optional</i> | Parameters for configuring the network protocols on the CP. | < cpProtocolData > array |
| cpdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|--|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |

| Name | Description | Schema |
|--------------------------------|---|-------------------|
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

sapInfo

| Name | Description | Schema |
|---|---|--|
| description <i>optional</i> | Human readable description for the SAP instance. | string |
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| sapName <i>required</i> | Human readable name for the SAP instance. | string |
| sapProtocolInfo <i>required</i> | Network protocol information for this SAP. | < sapProtocolInfo > array |
| sapdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

sapProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |

| Name | Description | Schema |
|-------------------------------------|--|-------------------|
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

virtualLinkInfo

| Name | Description | Schema |
|---|---|------------------------------------|
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| linkPort <i>optional</i> | Link ports of the VL instance. Cardinality of zero indicates that no port has yet been created for the VL instance. | < linkPort > array |
| nsVirtualLinkDescId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

| Name | Description | Schema |
|---|--|---|
| nsVirtualLink ProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| resourceHandle <i>optional</i> | Identifier(s) of the virtualised network resource(s) realizing the VL instance. See note. | < resourceHandle > array |

linkPort

| Name | Description | Schema |
|--|---|---|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsCpHandle <i>optional</i> | Identifier of the CP/SAP instance to be connected to this link port. The value refers to a vnfExtCpInfo item in the VnfInstance, or a pnfExtCpInfo item in the PnfInfo, or a sapInfo item in the NS instance. There shall be at most one link port associated with any connection point instance. | < nsCpHandle > array |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

nsCpHandle

| Name | Description | Schema |
|--|---|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|---|--------|
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfInstance

| Name | Description | Schema |
|---|---|--|
| extensions <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| instantiatedVnfInfo <i>optional</i> | Information specific to an instantiated VNF instance. This attribute shall be present if the instantiateState attribute value is INSTANTIATED. | instantiatedVnfInfo |
| instantiationState <i>required</i> | The instantiation state of the VNF. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfConfigurableProperties <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfInstanceDescription <i>optional</i> | Human-readable description of the VNF instance. This attribute can be modified with the PATCH method. | string |

| Name | Description | Schema |
|--|---|--------|
| vnfInstanceName <i>optional</i> | Name of the VNF instance. This attribute can be modified with the PATCH method. | string |
| vnfPkgId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfProductName <i>required</i> | Name to identify the VNF Product. The value is copied from the VNFD. | string |
| vnfProvider <i>required</i> | Provider of the VNF and the VNFD. The value is copied from the VNFD. | string |
| vnfSoftwareVersion <i>required</i> | A Version. Representation: string of variable length. | string |
| vnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfdVersion <i>required</i> | A Version. Representation: string of variable length. | string |

instantiatedVnfInfo

| Name | Description | Schema |
|---|--|---|
| extCpInfo <i>optional</i> | Information about the external CPs exposed by the VNF instance. | < extCpInfo > array |
| extManagedVirtualLinkInfo <i>optional</i> | External virtual links the VNF instance is connected to. | < extManagedVirtualLinkInfo > array |
| extVirtualLinkInfo <i>optional</i> | Information about the external VLS the VNF instance is connected to. | < extVirtualLinkInfo > array |
| flavourId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

| Name | Description | Schema |
|--|---|--|
| localizationLanguage <i>optional</i> | Information about localization language of the VNF (includes e.g. strings in the VNFD). The localization languages supported by a VNF can be declared in the VNFD, and localization language selection can take place at instantiation time. The value shall comply with the format defined in IETF RFC 5646. | string |
| monitoringParameters <i>optional</i> | Performance metrics tracked by the VNFM (e.g. for auto-scaling purposes) as identified by the VNF provider in the VNFD. | < monitoringParameters > array |
| scaleStatus <i>optional</i> | Scale status of the VNF, one entry per aspect. Represents for every scaling aspect how "big" the VNF has been scaled w.r.t. that aspect. | < scaleStatus > array |
| virtualLinkResourceInfo <i>optional</i> | Information about the virtualised network resources used by the VLs of the VNF instance. | < virtualLinkResourceInfo > array |
| virtualStorageResourceInfo <i>optional</i> | Information on the virtualised storage resource(s) used as storage for the VNF instance. | < virtualStorageResourceInfo > array |
| vnfState <i>required</i> | | enum (STARTED, STOPPED) |
| vnfcResourceInfo <i>optional</i> | Information about the virtualised compute and storage resources used by the VNFCs of the VNF instance. | < vnfcResourceInfo > array |

extCpInfo

| Name | Description | Schema |
|--|---|--------|
| associatedVnfVirtualLinkId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| associatedVnfCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|--|---|---|
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| extLinkPortId <i>optional</i> | This type describes the protocol layer(s) that a CP or SAP uses together with protocol-related information, like addresses. It shall comply with the provisions defined in Table 6.5.3.58-1. | extLinkPortId |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|---------------------------------------|---|--|
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extLinkPortId

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |

| Name | Description | Schema |
|-------------------------------------|--|-----------------------|
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extManagedVirtualLinkInfo

| Name | Description | Schema |
|---|---|---------------------------------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| networkResource <i>optional</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |

| Name | Description | Schema |
|--|--|---|
| vnfLinkPorts <i>optional</i> | Link ports of this VL. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|--|---|--------------------------------|
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

extVirtualLinkInfo

| Name | Description | Schema |
|--|---|---|
| extLinkPorts <i>optional</i> | Link ports of this VL. | < extLinkPorts > array |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

monitoringParameters

| Name | Description | Schema |
|---|--|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the VNFD. | string |
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

scaleStatus

| Name | Description | Schema |
|--------------------------------------|--|---------|
| aspectId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| scaleLevel <i>required</i> | Indicates the scale level. The minimum value shall be 0 and the maximum value shall be $\leq \text{maxScaleLevel}$ as described in the VNFD. | integer |

virtualLinkResourceInfo

| Name | Description | Schema |
|------------------------------|---|--------|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|--|---|---|
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| networkResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfLinkPorts <i>optional</i> | Links ports of this VL. Shall be present when the linkPort is used for external connectivity by the VNF (refer to VnfLinkPortInfo). May be present otherwise. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

virtualStorageResourceInfo

| Name | Description | Schema |
|------------------------------|---|--------|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|--|---|---------------------------------|
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | storageResource |
| virtualStorageDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

storageResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcResourceInfo

| Name | Description | Schema |
|--|---|--------------------------------------|
| computeResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | computeResource |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResourceIds <i>optional</i> | References to the VirtualStorage resources. The value refers to a VirtualStorageResourceInfo item in the VnfInstance. | < string > array |
| vdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| vnfcCpInfo <i>optional</i> | CPs of the VNFC instance. Shall be present when that particular CP of the VNFC instance is associated to an external CP of the VNF instance. May be present otherwise. | < vnfcCpInfo > array |

computeResource

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcCpInfo

| Name | Description | Schema |
|--|---|---|
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfExtCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfLinkPortId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

vnffgInfo

| Name | Description | Schema |
|---|--|---|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsCpHandle <i>optional</i> | Identifiers of the CP instances attached to the constituent VNFs and PNFs or the SAP instances of the VNFFG. See note. | < nsCpHandle > array |
| nsVirtualLinkInfoId <i>optional</i> | Identifier(s) of the constituent VL instance(s) of this VNFFG instance. | < string > array |
| pnfdInfoId <i>optional</i> | Identifier(s) of the constituent PNF instance(s) of this VNFFG instance. | < string > array |
| vnfInstanceId <i>required</i> | Identifier(s) of the constituent VNF instance(s) of this VNFFG instance. | < string > array |
| vnffgdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

nsCpHandle

| Name | Description | Schema |
|--|--|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|---|--------|
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

Response 400

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 416

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Query multiple NS instances.

```
GET /ns_instances
```

Description

Query NS Instances. The GET method queries information about multiple NS instances. This method shall support the URI query parameters, request and response data structures, and response codes, as specified in the Tables 6.4.2.3.2-1 and 6.4.2.3.2-2.

Parameters

| Type | Name | Description | Schema |
|--------|---|--|--------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235. | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Query | all_fields <i>optional</i> | Include all complex attributes in the response. See clause 4.3.3 for details. The NFVO shall support this parameter. | string |
| Query | exclude_default <i>optional</i> | "Indicates to exclude the following complex attributes from the response. See clause 4.3.3 for details. The NFVO shall support this parameter. The following attributes shall be excluded from the NsInstance structure in the response body if this parameter is provided, or none of the parameters "all_fields," "fields", "exclude_fields", "exclude_default" are provided: - vnInstances - pnfInfo - virtualLinkInfo - vnffgInfo - sapInfo - nsScaleStatus - additionalAffinityOrAntiAffinityRules" | string |
| Query | exclude_fields <i>optional</i> | "Complex attributes to be excluded from the response. See clause 4.3.3 for details. The NFVO should support this parameter." | string |
| Query | fields <i>optional</i> | "Complex attributes to be included into the response. See clause 4.3.3 for details. The NFVO should support this parameter." | string |

| Type | Name | Description | Schema |
|-------|--|---|--------|
| Query | filter <i>optional</i> | Attribute-based filtering expression according to clause 4.3.2. The NFVO shall support receiving this parameter as part of the URI query string. The OSS/BSS may supply this parameter. All attribute names that appear in the NsInstance and in data types referenced from it shall be supported by the NFVO in the filter expression. | string |
| Query | nextpage_opaque_marker <i>optional</i> | Marker to obtain the next page of a paged response. Shall be supported by the NFVO if the NFVO supports alternative 2 (paging) according to clause 4.7.2.1 for this resource. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|--|---|
| 200 | <p>200 OK Information about zero or more NS instances was queried successfully. The response body shall contain in an array the representations of zero or more NS instances, as defined in clause 6.5.2.8. If the NFVO supports alternative 2 (paging) according to clause 4.7.2.1 for this resource, inclusion of the Link HTTP header in this response shall follow the provisions in clause 4.7.2.3.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> <p>Link (string) : Reference to other resources. Used for paging in the present document, see clause 4.7.2.1.</p> | < Response 200 > array |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|--------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 416 | <p>416 RANGE NOT SATISFIABLE</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 416 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 200

| Name | Description | Schema |
|--------------------------------------|--|------------|
| NsInstance <i>optional</i> | This type represents a response for Query NS operation. It shall comply with the provisions defined in Table 6.5.2.10-1. | NsInstance |

NsInstance

| Name | Description | Schema |
|--|---|---|
| _links <i>required</i> | Links to resources related to this resource. | _links |
| additionalAffinityOrAntiAffinityRule <i>optional</i> | Information on the additional affinity or anti-affinity rule from NS instantiation operation. Shall not conflict with rules already specified in the NSD. | < additionalAffinityOrAntiAffinityRule > array |
| flavourId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| monitoringParameter <i>optional</i> | Performance metrics tracked by the NFVO (e.g. for auto-scaling purposes) as identified by the NS designer in the NSD. | < monitoringParameter > array |

| Name | Description | Schema |
|---|---|---|
| nestedNsInstanceId <i>optional</i> | Identifier of the nested NS(s) of the NS instance. | < string > array |
| nsInstanceDescription <i>required</i> | Human readable description of the NS instance. | string |
| nsInstanceName <i>required</i> | Human readable name of the NS instance. | string |
| nsScaleStatus <i>optional</i> | Status of each NS scaling aspect declared in the applicable DF, how "big" the NS instance has been scaled w.r.t. that aspect. This attribute shall be present if the nsState attribute value is INSTANTIATED. | < nsScaleStatus > array |
| nsState <i>required</i> | The state of the NS instance. Permitted values: NOT_INSTANTIATED: The NS instance is terminated or not instantiated. INSTANTIATED: The NS instance is instantiated. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| nsdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfInfo <i>optional</i> | Information on the PNF(s) that are part of the NS instance. | < pnfInfo > array |
| sapInfo <i>optional</i> | Information on the SAP(s) of the NS instance. | < sapInfo > array |
| virtualLinkInfo <i>optional</i> | Information on the VL(s) of the NS instance. This attribute shall be present if the nsState attribute value is INSTANTIATED and if the NS instance has specified connectivity. | < virtualLinkInfo > array |
| vnfInstance <i>optional</i> | Information on constituent VNF(s) of the NS instance. | < vnfInstance > array |

| Name | Description | Schema |
|-------------------------------------|---|-------------------------------------|
| vnffgInfo <i>optional</i> | Information on the VNFFG(s) of the NS instance. | < vnffgInfo > array |

links

| Name | Description | Schema |
|---|--|---|
| heal <i>optional</i> | This type represents a link to a resource. | heal |
| instantiate <i>optional</i> | This type represents a link to a resource. | instantiate |
| nestedNsInstances <i>optional</i> | Links to resources related to this notification. | < nestedNsInstances > array |
| scale <i>optional</i> | This type represents a link to a resource. | scale |
| self <i>required</i> | This type represents a link to a resource. | self |
| terminate <i>optional</i> | This type represents a link to a resource. | terminate |
| update <i>optional</i> | This type represents a link to a resource. | update |

heal

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

instantiate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

nestedNsInstances

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

scale

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

terminate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

update

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

additionalAffinityOrAntiAffinityRule

| Name | Description | Schema |
|--|---|--|
| affinityOrAntiAffiinty <i>required</i> | The type of the constraint. Permitted values: AFFINITY ANTI_AFFINITY. | enum (AFFINITY, ANTI_AFFINITY) |
| scope <i>required</i> | Specifies the scope of the rule where the placement constraint applies. Permitted values: NFVI_POP ZONE ZONE_GROUP NFVI_NODE. | enum (NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE) |
| vnfInstanceId <i>optional</i> | Reference to the existing VNF instance as the subject of the affinity or anti-affinity rule. The existing VNF instance is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfProfileId <i>optional</i> | Reference to a vnfProfile defined in the NSD. At least one VnfProfile which is used to instantiate VNF for the NS to be instantiated as the subject of the affinity or anti-affinity rule shall be present. When the VnfProfile which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VnfProfile presents is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfdId <i>optional</i> | Reference to a VNFD. When the VNFD which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VNFD presents is not necessary as a part of the NS to be instantiated. | < string > array |

monitoringParameter

| Name | Description | Schema |
|------------------------------|---|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

| Name | Description | Schema |
|---|--|--------|
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the NSD. | string |
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

nsScaleStatus

| Name | Description | Schema |
|---|---|--------|
| nsScaleLevelId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsScalingAspectId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

pnfInfo

| Name | Description | Schema |
|--|---|------------------------|
| cpInfo <i>optional</i> | This type represents the information about the external CP of the PNF. It shall comply with the provisions defined in Table 6.5.3.17-1. | cpInfo |
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfName <i>optional</i> | Name of the PNF. | string |
| pnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| pnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |

cpInfo

| Name | Description | Schema |
|--|--|---|
| cpInstanceId <i>required</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| cpProtocolData <i>optional</i> | Parameters for configuring the network protocols on the CP. | < cpProtocolData > array |
| cpdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|--|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |

| Name | Description | Schema |
|---|---|-----------------------|
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

sapInfo

| Name | Description | Schema |
|---------------------------------------|---|--------|
| description <i>optional</i> | Human readable description for the SAP instance. | string |
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |

| Name | Description | Schema |
|---|--|--|
| sapName <i>required</i> | Human readable name for the SAP instance. | string |
| sapProtocolInfo <i>required</i> | Network protocol information for this SAP. | < sapProtocolInfo > array |
| sapId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

sapProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

virtualLinkInfo

| Name | Description | Schema |
|------------------------------|---|--------|
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |

| Name | Description | Schema |
|--|---|--|
| linkPort <i>optional</i> | Link ports of the VL instance. Cardinality of zero indicates that no port has yet been created for the VL instance. | < linkPort > array |
| nsVirtualLinkDescId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsVirtualLinkProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| resourceHandle <i>optional</i> | Identifier(s) of the virtualised network resource(s) realizing the VL instance. See note. | < resourceHandle > array |

linkPort

| Name | Description | Schema |
|--|---|--------------------------------------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsCpHandle <i>optional</i> | Identifier of the CP/SAP instance to be connected to this link port. The value refers to a vnfExtCpInfo item in the VnfInstance, or a pnfExtCpInfo item in the PnfInfo, or a sapInfo item in the NS instance. There shall be at most one link port associated with any connection point instance. | < nsCpHandle > array |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

nsCpHandle

| Name | Description | Schema |
|---|---|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |

| Name | Description | Schema |
|--|---|--------|
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--------------------------------------|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |

| Name | Description | Schema |
|--|--|--------|
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfInstance

| Name | Description | Schema |
|---|---|--|
| extensions <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| instantiatedVnfInfo <i>optional</i> | Information specific to an instantiated VNF instance. This attribute shall be present if the instantiateState attribute value is INSTANTIATED. | instantiatedVnfInfo |
| instantiationState <i>required</i> | The instantiation state of the VNF. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|---|---|--------|
| vnfConfigurableProperties <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfInstanceDescription <i>optional</i> | Human-readable description of the VNF instance. This attribute can be modified with the PATCH method. | string |
| vnfInstanceName <i>optional</i> | Name of the VNF instance. This attribute can be modified with the PATCH method. | string |
| vnfPkgId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfProductName <i>required</i> | Name to identify the VNF Product. The value is copied from the VNFD. | string |
| vnfProvider <i>required</i> | Provider of the VNF and the VNFD. The value is copied from the VNFD. | string |
| vnfSoftwareVersion <i>required</i> | A Version. Representation: string of variable length. | string |
| vnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfdVersion <i>required</i> | A Version. Representation: string of variable length. | string |

instantiatedVnfInfo

| Name | Description | Schema |
|---|---|---|
| extCpInfo <i>optional</i> | Information about the external CPs exposed by the VNF instance. | < extCpInfo > array |
| extManagedVirtualLinkInfo <i>optional</i> | External virtual links the VNF instance is connected to. | < extManagedVirtualLinkInfo > array |

| Name | Description | Schema |
|--|---|--|
| extVirtualLinkInfo <i>optional</i> | Information about the external VLs the VNF instance is connected to. | < extVirtualLinkInfo > array |
| flavourId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| localizationLanguage <i>optional</i> | Information about localization language of the VNF (includes e.g. strings in the VNFD). The localization languages supported by a VNF can be declared in the VNFD, and localization language selection can take place at instantiation time. The value shall comply with the format defined in IETF RFC 5646. | string |
| monitoringParameters <i>optional</i> | Performance metrics tracked by the VNFM (e.g. for auto-scaling purposes) as identified by the VNF provider in the VNFD. | < monitoringParameters > array |
| scaleStatus <i>optional</i> | Scale status of the VNF, one entry per aspect. Represents for every scaling aspect how "big" the VNF has been scaled w.r.t. that aspect. | < scaleStatus > array |
| virtualLinkResourceInfo <i>optional</i> | Information about the virtualised network resources used by the VLs of the VNF instance. | < virtualLinkResourceInfo > array |
| virtualStorageResourceInfo <i>optional</i> | Information on the virtualised storage resource(s) used as storage for the VNF instance. | < virtualStorageResourceInfo > array |
| vnfState <i>required</i> | | enum (STARTED, STOPPED) |
| vnfcResourceInfo <i>optional</i> | Information about the virtualised compute and storage resources used by the VNFCs of the VNF instance. | < vnfcResourceInfo > array |

extCpInfo

| Name | Description | Schema |
|--|---|--------|
| associatedVnfVirtualLinkId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|---|---|---|
| associatedVnfCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| extLinkPortId <i>optional</i> | This type describes the protocol layer(s) that a CP or SAP uses together with protocol-related information, like addresses. It shall comply with the provisions defined in Table 6.5.3.58-1. | extLinkPortId |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |

| Name | Description | Schema |
|---------------------------------------|---|--|
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extLinkPortId

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extManagedVirtualLinkInfo

| Name | Description | Schema |
|------------------------------|--|--------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|---|---|
| networkResource <i>optional</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |
| vnfLinkPorts <i>optional</i> | Link ports of this VL. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|--------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

extVirtualLinkInfo

| Name | Description | Schema |
|--|--|---|
| extLinkPorts <i>optional</i> | Link ports of this VL. | < extLinkPorts > array |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|---|--------------------------------|
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

monitoringParameters

| Name | Description | Schema |
|---|--|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the VNFD. | string |
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

scaleStatus

| Name | Description | Schema |
|--------------------------------------|--|---------|
| aspectId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| scaleLevel <i>required</i> | Indicates the scale level. The minimum value shall be 0 and the maximum value shall be $\leq \text{maxScaleLevel}$ as described in the VNFD. | integer |

virtualLinkResourceInfo

| Name | Description | Schema |
|--|---|---|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| networkResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfLinkPorts <i>optional</i> | Links ports of this VL. Shall be present when the linkPort is used for external connectivity by the VNF (refer to VnfLinkPortInfo). May be present otherwise. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

virtualStorageResourceInfo

| Name | Description | Schema |
|--|---|---------------------------------|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | storageResource |
| virtualStorageDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

storageResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcResourceInfo

| Name | Description | Schema |
|--|---|--------------------------------------|
| computeResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | computeResource |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResourceIds <i>optional</i> | References to the VirtualStorage resources. The value refers to a VirtualStorageResourceInfo item in the VnfInstance. | < string > array |
| vduId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| vnfcCpInfo <i>optional</i> | CPs of the VNFC instance. Shall be present when that particular CP of the VNFC instance is associated to an external CP of the VNF instance. May be present otherwise. | < vnfcCpInfo > array |

computeResource

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcCpInfo

| Name | Description | Schema |
|--|---|---|
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfExtCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfLinkPortId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

vnffgInfo

| Name | Description | Schema |
|---|--|---|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsCpHandle <i>optional</i> | Identifiers of the CP instances attached to the constituent VNFs and PNFs or the SAP instances of the VNFFG. See note. | < nsCpHandle > array |
| nsVirtualLinkInfoId <i>optional</i> | Identifier(s) of the constituent VL instance(s) of this VNFFG instance. | < string > array |
| pnfdInfoId <i>optional</i> | Identifier(s) of the constituent PNF instance(s) of this VNFFG instance. | < string > array |
| vnfInstanceId <i>required</i> | Identifier(s) of the constituent VNF instance(s) of this VNFFG instance. | < string > array |
| vnffgdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

nsCpHandle

| Name | Description | Schema |
|--|--|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|---|--------|
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

Response 400

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 416

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Read an individual NS instance resource.

```
GET /ns_instances/{nsInstanceId}
```

Description

The GET method retrieves information about a NS instance by reading an individual NS instance resource.

Parameters

| Type | Name | Description | Schema |
|--------|---|--|--------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235. | string |
| Header | Content-Type <i>required</i> | The MIME type of the body of the request. Reference: IETF RFC 7231 | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | nsInstanceId <i>required</i> | Identifier of the NS instance. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 200 | <p>200 OK Information about an individual NS instance was queried successfully. The response body shall contain a representation of the NS instance.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response. This header field shall be present if the response has a non-empty message body.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 200 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be properly specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 416 | <p>416 RANGE NOT SATISFIABLE</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 416 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 200

| Name | Description | Schema |
|--|---|--|
| _links <i>required</i> | Links to resources related to this resource. | _links |
| additionalAffinityOrAntiAffinityRule <i>optional</i> | Information on the additional affinity or anti-affinity rule from NS instantiation operation. Shall not conflict with rules already specified in the NSD. | < additionalAffinityOrAntiAffinityRule > array |
| flavourId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| monitoringParameter <i>optional</i> | Performance metrics tracked by the NFVO (e.g. for auto-scaling purposes) as identified by the NS designer in the NSD. | < monitoringParameter > array |
| nestedNsInstanceId <i>optional</i> | Identifier of the nested NS(s) of the NS instance. | < string > array |
| nsInstanceDescription <i>required</i> | Human readable description of the NS instance. | string |

| Name | Description | Schema |
|---|---|---|
| nsInstanceName <i>required</i> | Human readable name of the NS instance. | string |
| nsScaleStatus <i>optional</i> | Status of each NS scaling aspect declared in the applicable DF, how "big" the NS instance has been scaled w.r.t. that aspect. This attribute shall be present if the nsState attribute value is INSTANTIATED. | < nsScaleStatus > array |
| nsState <i>required</i> | The state of the NS instance. Permitted values: NOT_INSTANTIATED: The NS instance is terminated or not instantiated. INSTANTIATED: The NS instance is instantiated. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| nsdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfInfo <i>optional</i> | Information on the PNF(s) that are part of the NS instance. | < pnfInfo > array |
| sapInfo <i>optional</i> | Information on the SAP(s) of the NS instance. | < sapInfo > array |
| virtualLinkInfo <i>optional</i> | Information on the VL(s) of the NS instance. This attribute shall be present if the nsState attribute value is INSTANTIATED and if the NS instance has specified connectivity. | < virtualLinkInfo > array |
| vnfInstance <i>optional</i> | Information on constituent VNF(s) of the NS instance. | < vnfInstance > array |
| vnffgInfo <i>optional</i> | Information on the VNFFG(s) of the NS instance. | < vnffgInfo > array |

links

| Name | Description | Schema |
|--------------------------------|--|----------------------|
| heal <i>optional</i> | This type represents a link to a resource. | heal |

| Name | Description | Schema |
|---|--|---|
| instantiate <i>optional</i> | This type represents a link to a resource. | instantiate |
| nestedNsInstances <i>optional</i> | Links to resources related to this notification. | < nestedNsInstances > array |
| scale <i>optional</i> | This type represents a link to a resource. | scale |
| self <i>required</i> | This type represents a link to a resource. | self |
| terminate <i>optional</i> | This type represents a link to a resource. | terminate |
| update <i>optional</i> | This type represents a link to a resource. | update |

heal

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

instantiate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

nestedNsInstances

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

scale

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

terminate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

update

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

additionalAffinityOrAntiAffinityRule

| Name | Description | Schema |
|--|---|--|
| affinityOrAntiAffinity <i>required</i> | The type of the constraint. Permitted values: AFFINITY, ANTI_AFFINITY. | enum (AFFINITY, ANTI_AFFINITY) |
| scope <i>required</i> | Specifies the scope of the rule where the placement constraint applies. Permitted values: NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE. | enum (NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE) |
| vnfInstanceId <i>optional</i> | Reference to the existing VNF instance as the subject of the affinity or anti-affinity rule. The existing VNF instance is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfProfileId <i>optional</i> | Reference to a vnfProfile defined in the NSD. At least one VnfProfile which is used to instantiate VNF for the NS to be instantiated as the subject of the affinity or anti-affinity rule shall be present. When the VnfProfile which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VnfProfile presents is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfdId <i>optional</i> | Reference to a VNFD. When the VNFD which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VNFD presents is not necessary as a part of the NS to be instantiated. | < string > array |

monitoringParameter

| Name | Description | Schema |
|---|--|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the NSD. | string |
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

nsScaleStatus

| Name | Description | Schema |
|---|--|--------|
| nsScaleLevelId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsScalingAspectId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

pnfInfo

| Name | Description | Schema |
|--|---|------------------------|
| cpInfo <i>optional</i> | This type represents the information about the external CP of the PNF. It shall comply with the provisions defined in Table 6.5.3.17-1. | cpInfo |
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfName <i>optional</i> | Name of the PNF. | string |
| pnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| pnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |

cpInfo

| Name | Description | Schema |
|--|---|---|
| cpInstanceId <i>required</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| cpProtocolData <i>optional</i> | Parameters for configuring the network protocols on the CP. | < cpProtocolData > array |
| cpdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|--|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |

| Name | Description | Schema |
|--------------------------------|---|-------------------|
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

sapInfo

| Name | Description | Schema |
|---|---|--|
| description <i>optional</i> | Human readable description for the SAP instance. | string |
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| sapName <i>required</i> | Human readable name for the SAP instance. | string |
| sapProtocolInfo <i>required</i> | Network protocol information for this SAP. | < sapProtocolInfo > array |
| sapdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

sapProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |

| Name | Description | Schema |
|-------------------------------------|--|-------------------|
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

virtualLinkInfo

| Name | Description | Schema |
|---|---|------------------------------------|
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| linkPort <i>optional</i> | Link ports of the VL instance. Cardinality of zero indicates that no port has yet been created for the VL instance. | < linkPort > array |
| nsVirtualLinkDescId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

| Name | Description | Schema |
|--|--|---|
| nsVirtualLinkProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| resourceHandle <i>optional</i> | Identifier(s) of the virtualised network resource(s) realizing the VL instance. See note. | < resourceHandle > array |

linkPort

| Name | Description | Schema |
|--|---|---|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsCpHandle <i>optional</i> | Identifier of the CP/SAP instance to be connected to this link port. The value refers to a vnfExtCpInfo item in the VnfInstance, or a pnfExtCpInfo item in the PnfInfo, or a sapInfo item in the NS instance. There shall be at most one link port associated with any connection point instance. | < nsCpHandle > array |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

nsCpHandle

| Name | Description | Schema |
|--|---|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|---|--------|
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfInstance

| Name | Description | Schema |
|---|---|--|
| extensions <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| instantiatedVnfInfo <i>optional</i> | Information specific to an instantiated VNF instance. This attribute shall be present if the instantiateState attribute value is INSTANTIATED. | instantiatedVnfInfo |
| instantiationState <i>required</i> | The instantiation state of the VNF. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfConfigurableProperties <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfInstanceDescription <i>optional</i> | Human-readable description of the VNF instance. This attribute can be modified with the PATCH method. | string |

| Name | Description | Schema |
|--|---|--------|
| vnfInstanceName <i>optional</i> | Name of the VNF instance. This attribute can be modified with the PATCH method. | string |
| vnfPkgId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfProductName <i>required</i> | Name to identify the VNF Product. The value is copied from the VNFD. | string |
| vnfProvider <i>required</i> | Provider of the VNF and the VNFD. The value is copied from the VNFD. | string |
| vnfSoftwareVersion <i>required</i> | A Version. Representation: string of variable length. | string |
| vnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfdVersion <i>required</i> | A Version. Representation: string of variable length. | string |

instantiatedVnfInfo

| Name | Description | Schema |
|---|--|---|
| extCpInfo <i>optional</i> | Information about the external CPs exposed by the VNF instance. | < extCpInfo > array |
| extManagedVirtualLinkInfo <i>optional</i> | External virtual links the VNF instance is connected to. | < extManagedVirtualLinkInfo > array |
| extVirtualLinkInfo <i>optional</i> | Information about the external VLs the VNF instance is connected to. | < extVirtualLinkInfo > array |
| flavourId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

| Name | Description | Schema |
|--|---|--|
| localizationLanguage <i>optional</i> | Information about localization language of the VNF (includes e.g. strings in the VNFD). The localization languages supported by a VNF can be declared in the VNFD, and localization language selection can take place at instantiation time. The value shall comply with the format defined in IETF RFC 5646. | string |
| monitoringParameters <i>optional</i> | Performance metrics tracked by the VNFM (e.g. for auto-scaling purposes) as identified by the VNF provider in the VNFD. | < monitoringParameters > array |
| scaleStatus <i>optional</i> | Scale status of the VNF, one entry per aspect. Represents for every scaling aspect how "big" the VNF has been scaled w.r.t. that aspect. | < scaleStatus > array |
| virtualLinkResourceInfo <i>optional</i> | Information about the virtualised network resources used by the VLs of the VNF instance. | < virtualLinkResourceInfo > array |
| virtualStorageResourceInfo <i>optional</i> | Information on the virtualised storage resource(s) used as storage for the VNF instance. | < virtualStorageResourceInfo > array |
| vnfState <i>required</i> | | enum (STARTED, STOPPED) |
| vnfcResourceInfo <i>optional</i> | Information about the virtualised compute and storage resources used by the VNFCs of the VNF instance. | < vnfcResourceInfo > array |

extCpInfo

| Name | Description | Schema |
|--|---|--------|
| associatedVnfVirtualLinkId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| associatedVnfcCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|--|---|---|
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| extLinkPortId <i>optional</i> | This type describes the protocol layer(s) that a CP or SAP uses together with protocol-related information, like addresses. It shall comply with the provisions defined in Table 6.5.3.58-1. | extLinkPortId |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|---------------------------------------|---|--|
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extLinkPortId

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |

| Name | Description | Schema |
|-------------------------------------|--|-----------------------|
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extManagedVirtualLinkInfo

| Name | Description | Schema |
|---|---|---------------------------------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| networkResource <i>optional</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |

| Name | Description | Schema |
|--|--|---|
| vnfLinkPorts <i>optional</i> | Link ports of this VL. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|--|---|--------------------------------|
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

extVirtualLinkInfo

| Name | Description | Schema |
|--|---|---|
| extLinkPorts <i>optional</i> | Link ports of this VL. | < extLinkPorts > array |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

monitoringParameters

| Name | Description | Schema |
|---|--|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the VNFD. | string |
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

scaleStatus

| Name | Description | Schema |
|--------------------------------------|--|---------|
| aspectId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| scaleLevel <i>required</i> | Indicates the scale level. The minimum value shall be 0 and the maximum value shall be $\leq \text{maxScaleLevel}$ as described in the VNFD. | integer |

virtualLinkResourceInfo

| Name | Description | Schema |
|------------------------------|---|--------|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|--|---|---|
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| networkResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfLinkPorts <i>optional</i> | Links ports of this VL. Shall be present when the linkPort is used for external connectivity by the VNF (refer to VnfLinkPortInfo). May be present otherwise. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

virtualStorageResourceInfo

| Name | Description | Schema |
|------------------------------|---|--------|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|--|---|---------------------------------|
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | storageResource |
| virtualStorageDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

storageResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcResourceInfo

| Name | Description | Schema |
|--|---|--------------------------------------|
| computeResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | computeResource |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResourceIds <i>optional</i> | References to the VirtualStorage resources. The value refers to a VirtualStorageResourceInfo item in the VnfInstance. | < string > array |
| vduId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| vnfcCpInfo <i>optional</i> | CPs of the VNFC instance. Shall be present when that particular CP of the VNFC instance is associated to an external CP of the VNF instance. May be present otherwise. | < vnfcCpInfo > array |

computeResource

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcCpInfo

| Name | Description | Schema |
|--|---|---|
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfExtCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfLinkPortId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

vnffgInfo

| Name | Description | Schema |
|---|--|---|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsCpHandle <i>optional</i> | Identifiers of the CP instances attached to the constituent VNFs and PNFs or the SAP instances of the VNFFG. See note. | < nsCpHandle > array |
| nsVirtualLinkInfoId <i>optional</i> | Identifier(s) of the constituent VL instance(s) of this VNFFG instance. | < string > array |
| pnfdInfoId <i>optional</i> | Identifier(s) of the constituent PNF instance(s) of this VNFFG instance. | < string > array |
| vnfInstanceId <i>required</i> | Identifier(s) of the constituent VNF instance(s) of this VNFFG instance. | < string > array |
| vnffgdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

nsCpHandle

| Name | Description | Schema |
|--|--|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|---|--------|
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

Response 400

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 416

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Delete NS instance resource.

```
DELETE /ns_instances/{nsInstanceId}
```

Description

Delete NS Identifier This method deletes an individual NS instance resource.

Parameters

| Type | Name | Description | Schema |
|--------|---|---|--------|
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235. | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | nsInstanceId <i>required</i> | Identifier of the NS instance. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|--|------------|
| 204 | <p>204 No Content The NS instance resource and the associated NS identifier were deleted successfully. The response body shall be empty.</p> <p>Headers :</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | No Content |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|--------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 412 | <p>412 PRECONDITION FAILED Error: A precondition given in an HTTP request header is not fulfilled. Typically, this is due to an ETag mismatch, indicating that the resource was modified by another entity. The response body should contain a ProblemDetails structure, in which the "detail" attribute should convey more information about the error.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 412 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 400

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 412

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Heal a NS instance.

```
POST /ns_instances/{nsInstanceId}/heal
```

Description

The POST method requests to heal a NS instance resource. This method shall follow the provisions specified in the Tables 6.4.7.3.1-1 and 6.4.7.3.1-2 for URI query parameters, request and response data structures, and response codes.

Parameters

| Type | Name | Description | Schema |
|--------|---|--|----------------------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235 | string |
| Header | Content-Type <i>required</i> | The MIME type of the body of the request. Reference: IETF RFC 7231 | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | nsInstanceId <i>required</i> | Identifier of the NS instance to be healed. | string |
| Body | body <i>required</i> | Parameters for the heal NS operation, as defined in clause 6.5.2.12. | body |

body

| Name | Description | Schema |
|---------------------------------------|---|--|
| healNsData <i>optional</i> | This type represents the information used to heal a NS. It shall comply with the provisions defined in Table 6.5.3.43-1. | healNsData |
| healVnfData <i>optional</i> | Additional parameters passed by the NFVO as input to the healing process, specific to the VNF being healed, as declared in the VNFD as part of "HealVnfOpConfig". | < healVnfData > array |

healNsData

| Name | Description | Schema |
|---|---|---|
| actionsHealing <i>optional</i> | Used to specify dedicated healing actions in a particular order (e.g. as a script). The actionsHealing attribute can be used to provide a specific script whose content and actions might only be possible to be derived during runtime. | < string > array |
| additionalParamsforNs <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| degreeHealing <i>required</i> | Indicates the degree of healing. Possible values include: - HEAL_RESTORE: Complete the healing of the NS restoring the state of the NS before the failure occurred - HEAL_QOS: Complete the healing of the NS based on the newest QoS values - HEAL_RESET: Complete the healing of the NS resetting to the original instantiation state of the NS - PARTIAL_HEALING | enum (HEAL_RESTORE, HEAL_QOS, HEAL_RESET, PARTIAL_HEALING) |
| healScript <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

healVnfData

| Name | Description | Schema |
|--|---|--------|
| additionalParams <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| cause <i>optional</i> | Indicates the reason why a healing procedure is required. | string |
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 202 | <p>202 ACCEPTED The request was accepted for processing, but the processing has not been completed. The response body shall be empty. The HTTP response shall include a "Location" HTTP header that contains the URI of the newly-created "NS lifecycle operation occurrence" resource corresponding to the operation.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>Location (string (url)) : The resource URI of the created NS instance.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 202 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 202

| Name | Description | Schema |
|------------------------|--|------------------------|
| _links required | Links to resources related to this resource. | _links |

| Name | Description | Schema |
|--|---|--|
| additionalAffinityOrAntiAffinityRule <i>optional</i> | Information on the additional affinity or anti-affinity rule from NS instantiation operation. Shall not conflict with rules already specified in the NSD. | < additionalAffinityOrAntiAffinityRule > array |
| flavourId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| monitoringParameter <i>optional</i> | Performance metrics tracked by the NFVO (e.g. for auto-scaling purposes) as identified by the NS designer in the NSD. | < monitoringParameter > array |
| nestedNsInstanceId <i>optional</i> | Identifier of the nested NS(s) of the NS instance. | < string > array |
| nsInstanceDescription <i>required</i> | Human readable description of the NS instance. | string |
| nsInstanceName <i>required</i> | Human readable name of the NS instance. | string |
| nsScaleStatus <i>optional</i> | Status of each NS scaling aspect declared in the applicable DF, how "big" the NS instance has been scaled w.r.t. that aspect. This attribute shall be present if the nsState attribute value is INSTANTIATED. | < nsScaleStatus > array |
| nsState <i>required</i> | The state of the NS instance. Permitted values: NOT_INSTANTIATED: The NS instance is terminated or not instantiated. INSTANTIATED: The NS instance is instantiated. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| nsdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|---|--|---|
| pnfInfo <i>optional</i> | Information on the PNF(s) that are part of the NS instance. | < pnfInfo > array |
| sapInfo <i>optional</i> | Information on the SAP(s) of the NS instance. | < sapInfo > array |
| virtualLinkInfo <i>optional</i> | Information on the VL(s) of the NS instance. This attribute shall be present if the nsState attribute value is INSTANTIATED and if the NS instance has specified connectivity. | < virtualLinkInfo > array |
| vnfInstance <i>optional</i> | Information on constituent VNF(s) of the NS instance. | < vnfInstance > array |
| vnffgInfo <i>optional</i> | Information on the VNFFG(s) of the NS instance. | < vnffgInfo > array |

_links

| Name | Description | Schema |
|---|--|---|
| heal <i>optional</i> | This type represents a link to a resource. | heal |
| instantiate <i>optional</i> | This type represents a link to a resource. | instantiate |
| nestedNsInstances <i>optional</i> | Links to resources related to this notification. | < nestedNsInstances > array |
| scale <i>optional</i> | This type represents a link to a resource. | scale |
| self <i>required</i> | This type represents a link to a resource. | self |
| terminate <i>optional</i> | This type represents a link to a resource. | terminate |
| update <i>optional</i> | This type represents a link to a resource. | update |

heal

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

instantiate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

nestedNsInstances

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

scale

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

terminate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

update

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

additionalAffinityOrAntiAffinityRule

| Name | Description | Schema |
|--|---|--|
| affinityOrAntiAffinity <i>required</i> | The type of the constraint. Permitted values: AFFINITY, ANTI_AFFINITY. | enum (AFFINITY, ANTI_AFFINITY) |
| scope <i>required</i> | Specifies the scope of the rule where the placement constraint applies. Permitted values: NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE. | enum (NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE) |
| vnfInstanceId <i>optional</i> | Reference to the existing VNF instance as the subject of the affinity or anti-affinity rule. The existing VNF instance is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfProfileId <i>optional</i> | Reference to a vnfProfile defined in the NSD. At least one VnfProfile which is used to instantiate VNF for the NS to be instantiated as the subject of the affinity or anti-affinity rule shall be present. When the VnfProfile which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VnfProfile presents is not necessary as a part of the NS to be instantiated. | < string > array |

| Name | Description | Schema |
|----------------------------------|--|------------------|
| vnfdId <i>optional</i> | Reference to a VNFD. When the VNFD which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VNFD presents is not necessary as a part of the NS to be instantiated. | < string > array |

monitoringParameter

| Name | Description | Schema |
|---|--|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the NSD. | string |
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

nsScaleStatus

| Name | Description | Schema |
|---|---|--------|
| nsScaleLevelId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsScalingAspectId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

pnfInfo

| Name | Description | Schema |
|----------------------------------|---|------------------------|
| cpInfo <i>optional</i> | This type represents the information about the external CP of the PNF. It shall comply with the provisions defined in Table 6.5.3.17-1. | cpInfo |
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| pnfName <i>optional</i> | Name of the PNF. | string |
| pnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| pnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |

cpInfo

| Name | Description | Schema |
|--|---|---|
| cpInstanceId <i>required</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| cpProtocolData <i>optional</i> | Parameters for configuring the network protocols on the CP. | < cpProtocolData > array |
| cpdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|---------------------------------------|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

sapInfo

| Name | Description | Schema |
|---|---|--|
| description <i>optional</i> | Human readable description for the SAP instance. | string |
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| sapName <i>required</i> | Human readable name for the SAP instance. | string |
| sapProtocolInfo <i>required</i> | Network protocol information for this SAP. | < sapProtocolInfo > array |
| sapdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

sapProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |

| Name | Description | Schema |
|---------------------------------------|---|--|
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

virtualLinkInfo

| Name | Description | Schema |
|--|---|--|
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| linkPort <i>optional</i> | Link ports of the VL instance. Cardinality of zero indicates that no port has yet been created for the VL instance. | < linkPort > array |
| nsVirtualLinkDescId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsVirtualLinkProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| resourceHandle <i>optional</i> | Identifier(s) of the virtualised network resource(s) realizing the VL instance. See note. | < resourceHandle > array |

linkPort

| Name | Description | Schema |
|------------------------------|--|--------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|---|--------------------------------------|
| nsCpHandle <i>optional</i> | Identifier of the CP/SAP instance to be connected to this link port. The value refers to a <code>vnfExtCpInfo</code> item in the <code>VnfInstance</code> , or a <code>pnfExtCpInfo</code> item in the <code>PnfInfo</code> , or a <code>sapInfo</code> item in the <code>NS</code> instance. There shall be at most one link port associated with any connection point instance. | < <code>nsCpHandle</code> > array |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | <code>resourceHandle</code> |

nsCpHandle

| Name | Description | Schema |
|--|---|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

resourceHandle

| Name | Description | Schema |
|--------------------------------------|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |

| Name | Description | Schema |
|--|--|--------|
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfInstance

| Name | Description | Schema |
|--------------------------------------|---|--------|
| extensions <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

| Name | Description | Schema |
|---|---|--|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| instantiatedVnfInfo <i>optional</i> | Information specific to an instantiated VNF instance. This attribute shall be present if the instantiateState attribute value is INSTANTIATED. | instantiatedVnfInfo |
| instantiationState <i>required</i> | The instantiation state of the VNF. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfConfigurableProperties <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfInstanceDescription <i>optional</i> | Human-readable description of the VNF instance. This attribute can be modified with the PATCH method. | string |
| vnfInstanceName <i>optional</i> | Name of the VNF instance. This attribute can be modified with the PATCH method. | string |
| vnfPkgId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfProductName <i>required</i> | Name to identify the VNF Product. The value is copied from the VNFD. | string |
| vnfProvider <i>required</i> | Provider of the VNF and the VNFD. The value is copied from the VNFD. | string |

| Name | Description | Schema |
|--|--|--------|
| vnfSoftwareVersion <i>required</i> | A Version. Representation: string of variable length. | string |
| vnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfdVersion <i>required</i> | A Version. Representation: string of variable length. | string |

instantiatedVnfInfo

| Name | Description | Schema |
|---|---|---|
| extCpInfo <i>optional</i> | Information about the external CPs exposed by the VNF instance. | < extCpInfo > array |
| extManagedVirtualLinkInfo <i>optional</i> | External virtual links the VNF instance is connected to. | < extManagedVirtualLinkInfo > array |
| extVirtualLinkInfo <i>optional</i> | Information about the external VLs the VNF instance is connected to. | < extVirtualLinkInfo > array |
| flavourId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| localizationLanguage <i>optional</i> | Information about localization language of the VNF (includes e.g. strings in the VNFD). The localization languages supported by a VNF can be declared in the VNFD, and localization language selection can take place at instantiation time. The value shall comply with the format defined in IETF RFC 5646. | string |
| monitoringParameters <i>optional</i> | Performance metrics tracked by the VNFM (e.g. for auto-scaling purposes) as identified by the VNF provider in the VNFD. | < monitoringParameters > array |
| scaleStatus <i>optional</i> | Scale status of the VNF, one entry per aspect. Represents for every scaling aspect how "big" the VNF has been scaled w.r.t. that aspect. | < scaleStatus > array |

| Name | Description | Schema |
|--|--|--|
| virtualLinkResourceInfo <i>optional</i> | Information about the virtualised network resources used by the VLs of the VNF instance. | < virtualLinkResourceInfo > array |
| virtualStorageResourceInfo <i>optional</i> | Information on the virtualised storage resource(s) used as storage for the VNF instance. | < virtualStorageResourceInfo > array |
| vnfState <i>required</i> | | enum (STARTED, STOPPED) |
| vnfcResourceInfo <i>optional</i> | Information about the virtualised compute and storage resources used by the VNFCs of the VNF instance. | < vnfcResourceInfo > array |

extCpInfo

| Name | Description | Schema |
|--|--|--|
| associatedVnfVirtualLinkId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| associatedVnfCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| extLinkPortId <i>optional</i> | This type describes the protocol layer(s) that a CP or SAP uses together with protocol-related information, like addresses. It shall comply with the provisions defined in Table 6.5.3.58-1. | extLinkPortId |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|------------------------------------|---|--------|
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |

| Name | Description | Schema |
|-------------------------------------|--|-----------------------|
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extLinkPortId

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extManagedVirtualLinkInfo

| Name | Description | Schema |
|--|---|---|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| networkResource <i>optional</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |
| vnfLinkPorts <i>optional</i> | Link ports of this VL. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

extVirtualLinkInfo

| Name | Description | Schema |
|--|---|---|
| extLinkPorts <i>optional</i> | Link ports of this VL. | < extLinkPorts > array |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--------------------------------------|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |

| Name | Description | Schema |
|--|--|--------|
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

monitoringParameters

| Name | Description | Schema |
|--------------------------------|---|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the VNFD. | string |

| Name | Description | Schema |
|---|--|--------|
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

scaleStatus

| Name | Description | Schema |
|--------------------------------------|---|---------|
| aspectId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| scaleLevel <i>required</i> | Indicates the scale level. The minimum value shall be 0 and the maximum value shall be \leq maxScaleLevel as described in the VNFD. | integer |

virtualLinkResourceInfo

| Name | Description | Schema |
|--|---|---|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| networkResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfLinkPorts <i>optional</i> | Links ports of this VL. Shall be present when the linkPort is used for external connectivity by the VNF (refer to VnfLinkPortInfo). May be present otherwise. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

virtualStorageResourceInfo

| Name | Description | Schema |
|--|---|---------------------------------|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | storageResource |
| virtualStorageDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

storageResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcResourceInfo

| Name | Description | Schema |
|--|---|---------------------------------|
| computeResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | computeResource |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResourceIds <i>optional</i> | References to the VirtualStorage resources. The value refers to a VirtualStorageResourceInfo item in the VnfInstance. | < string > array |
| vdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

| Name | Description | Schema |
|--------------------------------------|--|--------------------------------------|
| vnfcCpInfo <i>optional</i> | CPs of the VNFC instance. Shall be present when that particular CP of the VNFC instance is associated to an external CP of the VNF instance. May be present otherwise. | < vnfcCpInfo > array |

computeResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcCpInfo

| Name | Description | Schema |
|--|---|--|
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

| Name | Description | Schema |
|---|---|--------|
| vnfExtCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfLinkPortId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |

| Name | Description | Schema |
|-------------------------------------|--|-----------------------|
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

vnffgInfo

| Name | Description | Schema |
|--------------------------------------|--|--------------------------------------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsCpHandle <i>optional</i> | Identifiers of the CP instances attached to the constituent VNFs and PNFs or the SAP instances of the VNFFG. See note. | < nsCpHandle > array |

| Name | Description | Schema |
|---|---|------------------|
| nsVirtualLinkInfoId <i>optional</i> | Identifier(s) of the constituent VL instance(s) of this VNFFG instance. | < string > array |
| pnfdInfoId <i>optional</i> | Identifier(s) of the constituent PNF instance(s) of this VNFFG instance. | < string > array |
| vnfInstanceId <i>required</i> | Identifier(s) of the constituent VNF instance(s) of this VNFFG instance. | < string > array |
| vnffgdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

nsCpHandle

| Name | Description | Schema |
|--|---|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

Response 400

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Instantiate a NS.

```
POST /ns_instances/{nsInstanceId}/instantiate
```

Description

The POST method requests to instantiate a NS instance resource.

Parameters

| Type | Name | Description | Schema |
|---------------|---|--|--------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235 | string |

| Type | Name | Description | Schema |
|--------|--|---|----------------------|
| Header | Content-Type <i>required</i> | The MIME type of the body of the request. Reference: IETF RFC 7231 | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | nsInstanceId <i>required</i> | Identifier of the NS instance to be instantiated. | string |
| Body | body <i>required</i> | Parameters for the instantiate NS operation, as defined in clause 6.5.2.10. | body |

body

| Name | Description | Schema |
|--|---|---|
| additionalAffinityOrAntiAffinityRule <i>optional</i> | Specifies additional affinity or anti-affinity constraint for the VNF instances to be instantiated as part of the NS instantiation. Shall not conflict with rules already specified in the NSD. | < additionalAffinityOrAntiAffinityRule > array |
| additionalParamForNestedNs <i>optional</i> | Allows the OSS/BSS to provide additional parameter(s) per nested NS instance (as opposed to the composite NS level, which is covered in additionalParamForNs, and as opposed to the VNF level, which is covered in additionalParamForVnf). This is for nested NS instances that are to be created by the NFVO as part of the NS instantiation and not for existing nested NS instances that are referenced for reuse. | < additionalParamForNestedNs > array |
| additionalParamsForNs <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| additionalParamsForVnf <i>optional</i> | Allows the OSS/BSS to provide additional parameter(s) per VNF instance (as opposed to the composite NS level, which is covered in additionalParamsForNs and as opposed to the nested NS level, which is covered in additionalParamForNestedNs). This is for VNFs that are to be created by the NFVO as part of the NS instantiation and not for existing VNF that are referenced for reuse. | < additionalParamsForVnf > array |

| Name | Description | Schema |
|--|--|---|
| addpnfData <i>optional</i> | Information on the PNF(s) that are part of this NS. | < addpnfData > array |
| localizationLanguage <i>optional</i> | Defines the location constraints for the VNF to be instantiated as part of the NS instantiation. An example can be a constraint for the VNF to be in a specific geographic location.. | < localizationLanguage > array |
| nestedNsInstanceData <i>optional</i> | Specify an existing NS instance to be used as a nested NS within the NS. If needed, the NS Profile to be used for this nested NS instance is also provided. NOTE 2: The NS DF of each nested NS shall be one of the allowed flavours in the associated NSD (as referenced in the nestedNsd attribute of the NSD of the NS to be instantiated). NOTE 3: The NSD of each referenced NSs (i.e. each nestedInstanceId) shall match the one of the nested NSD in the composite NSD. | < nestedNsInstanceData > array |
| nsFlavourId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsInstantiationLevelId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| sapData <i>optional</i> | Create data concerning the SAPs of this NS. | < sapData > array |
| vnfInstanceData <i>optional</i> | Specify an existing VNF instance to be used in the NS. If needed, the VNF Profile to be used for this VNF instance is also provided. The DF of the VNF instance shall match the VNF DF present in the associated VNF Profile. | < vnfInstanceData > array |

additionalAffinityOrAntiAffinityRule

| Name | Description | Schema |
|--|--|--|
| affinityOrAntiAffinity <i>required</i> | The type of the constraint. Permitted values: AFFINITY, ANTI_AFFINITY. | enum (AFFINITY, ANTI_AFFINITY) |
| scope <i>required</i> | Specifies the scope of the rule where the placement constraint applies. Permitted values: NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE. | enum (NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE) |

| Name | Description | Schema |
|---|---|------------------|
| vnfInstanceId <i>optional</i> | Reference to the existing VNF instance as the subject of the affinity or anti-affinity rule. The existing VNF instance is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfProfileId <i>optional</i> | Reference to a vnfProfile defined in the NSD. At least one VnfProfile which is used to instantiate VNF for the NS to be instantiated as the subject of the affinity or anti-affinity rule shall be present. When the VnfProfile which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VnfProfile presents is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfdId <i>optional</i> | Reference to a VNFD. When the VNFD which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VNFD presents is not necessary as a part of the NS to be instantiated. | < string > array |

additionalParamForNestedNs

| Name | Description | Schema |
|---|---|------------------|
| additionalParam <i>optional</i> | Additional parameters that are to be applied on a per nested NS instance. | < object > array |
| nsProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

additionalParamsForVnf

| Name | Description | Schema |
|--|---|--------|
| additionalParams <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

addpnfData

| Name | Description | Schema |
|--|--|----------------------------------|
| cpData <i>optional</i> | Address assigned for the PNF external CP(s). | < cpData > array |
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfName <i>required</i> | Name of the PNF | string |
| pnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| pnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |

cpData

| Name | Description | Schema |
|--|---|--|
| cpInstanceId16 <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| cpProtocolData <i>required</i> | Address assigned for this CP. | < cpProtocolData > array |
| cpdId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|---------------------------------------|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

localizationLanguage

| Name | Description | Schema |
|---|--|-------------------------------------|
| locationConstraints <i>optional</i> | This type represents location constraints for a VNF to be instantiated. The location constraints shall be presented as a country code, optionally followed by a civic address based on the format defined by IETF RFC 4776 [13]. | locationConstraints |
| vnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

locationConstraints

| Name | Description | Schema |
|---|---|---|
| civicAddressElement <i>optional</i> | Zero or more elements comprising the civic address. | < civicAddressElement > array |
| countryCode <i>required</i> | The two-letter ISO 3166 [29] country code in capital letters. | string |

civicAddressElement

| Name | Description | Schema |
|-----------------------------------|---|---------|
| caType <i>required</i> | Describe the content type of caValue. The value of caType shall comply with Section 3.4 of IETF RFC 4776 [13]. | integer |
| caValue <i>required</i> | Content of civic address element corresponding to the caType. The format caValue shall comply with Section 3.4 of IETF RFC 4776 [13]. | string |

nestedNsInstanceData

| Name | Description | Schema |
|--|---|--------|
| nestedNsInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsProfileId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |

sapData

| Name | Description | Schema |
|---|---|--|
| description <i>required</i> | Human readable description for the SAP. | string |
| sapName <i>required</i> | Human readable name for the SAP. | string |
| sapProtocolData <i>optional</i> | Parameters for configuring the network protocols on the SAP. | < sapProtocolData > array |
| sapId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

sapProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|--|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |

| Name | Description | Schema |
|--------------------------------------|--|--------------|
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

vnfInstanceData

| Name | Description | Schema |
|---|--|--------|
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

Responses

| HTTP Code | Description | Schema |
|------------|--|------------------------------|
| 202 | <p>202 ACCEPTED The request was accepted for processing, but the processing has not been completed. The response body shall be empty. The HTTP response shall include a "Location" HTTP header that contains the URI of the newly-created "NS lifecycle operation occurrence" resource corresponding to the operation.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>Location (string (url)) : The resource URI of the created NS instance.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 202 |

| HTTP Code | Description | Schema |
|-----------|---|-------------------------------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | <p>Response 400</p> |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 416 | <p>416 RANGE NOT SATISFIABLE</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 416 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 202

| Name | Description | Schema |
|--|---|--|
| _links <i>required</i> | Links to resources related to this resource. | _links |
| additionalAffinityOrAntiAffinityRule <i>optional</i> | Information on the additional affinity or anti-affinity rule from NS instantiation operation. Shall not conflict with rules already specified in the NSD. | < additionalAffinityOrAntiAffinityRule > array |
| flavourId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| monitoringParameter <i>optional</i> | Performance metrics tracked by the NFVO (e.g. for auto-scaling purposes) as identified by the NS designer in the NSD. | < monitoringParameter > array |
| nestedNsInstanceId <i>optional</i> | Identifier of the nested NS(s) of the NS instance. | < string > array |
| nsInstanceDescription <i>required</i> | Human readable description of the NS instance. | string |

| Name | Description | Schema |
|---|---|---|
| nsInstanceName <i>required</i> | Human readable name of the NS instance. | string |
| nsScaleStatus <i>optional</i> | Status of each NS scaling aspect declared in the applicable DF, how "big" the NS instance has been scaled w.r.t. that aspect. This attribute shall be present if the nsState attribute value is INSTANTIATED. | < nsScaleStatus > array |
| nsState <i>required</i> | The state of the NS instance. Permitted values: NOT_INSTANTIATED: The NS instance is terminated or not instantiated. INSTANTIATED: The NS instance is instantiated. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| nsdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfInfo <i>optional</i> | Information on the PNF(s) that are part of the NS instance. | < pnfInfo > array |
| sapInfo <i>optional</i> | Information on the SAP(s) of the NS instance. | < sapInfo > array |
| virtualLinkInfo <i>optional</i> | Information on the VL(s) of the NS instance. This attribute shall be present if the nsState attribute value is INSTANTIATED and if the NS instance has specified connectivity. | < virtualLinkInfo > array |
| vnfInstance <i>optional</i> | Information on constituent VNF(s) of the NS instance. | < vnfInstance > array |
| vnffgInfo <i>optional</i> | Information on the VNFFG(s) of the NS instance. | < vnffgInfo > array |

links

| Name | Description | Schema |
|--------------------------------|--|----------------------|
| heal <i>optional</i> | This type represents a link to a resource. | heal |

| Name | Description | Schema |
|---|--|---|
| instantiate <i>optional</i> | This type represents a link to a resource. | instantiate |
| nestedNsInstances <i>optional</i> | Links to resources related to this notification. | < nestedNsInstances > array |
| scale <i>optional</i> | This type represents a link to a resource. | scale |
| self <i>required</i> | This type represents a link to a resource. | self |
| terminate <i>optional</i> | This type represents a link to a resource. | terminate |
| update <i>optional</i> | This type represents a link to a resource. | update |

heal

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

instantiate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

nestedNsInstances

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

scale

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

terminate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

update

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

additionalAffinityOrAntiAffinityRule

| Name | Description | Schema |
|--|---|--|
| affinityOrAntiAffinity <i>required</i> | The type of the constraint. Permitted values: AFFINITY, ANTI_AFFINITY. | enum (AFFINITY, ANTI_AFFINITY) |
| scope <i>required</i> | Specifies the scope of the rule where the placement constraint applies. Permitted values: NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE. | enum (NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE) |
| vnfInstanceId <i>optional</i> | Reference to the existing VNF instance as the subject of the affinity or anti-affinity rule. The existing VNF instance is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfProfileId <i>optional</i> | Reference to a vnfProfile defined in the NSD. At least one VnfProfile which is used to instantiate VNF for the NS to be instantiated as the subject of the affinity or anti-affinity rule shall be present. When the VnfProfile which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VnfProfile presents is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfdId <i>optional</i> | Reference to a VNFD. When the VNFD which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VNFD presents is not necessary as a part of the NS to be instantiated. | < string > array |

monitoringParameter

| Name | Description | Schema |
|---|--|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the NSD. | string |
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

nsScaleStatus

| Name | Description | Schema |
|---|--|--------|
| nsScaleLevelId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsScalingAspectId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

pnfInfo

| Name | Description | Schema |
|--|---|------------------------|
| cpInfo <i>optional</i> | This type represents the information about the external CP of the PNF. It shall comply with the provisions defined in Table 6.5.3.17-1. | cpInfo |
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfName <i>optional</i> | Name of the PNF. | string |
| pnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| pnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |

cpInfo

| Name | Description | Schema |
|--|---|---|
| cpInstanceId <i>required</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| cpProtocolData <i>optional</i> | Parameters for configuring the network protocols on the CP. | < cpProtocolData > array |
| cpdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|--|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |

| Name | Description | Schema |
|--------------------------------|---|-------------------|
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

sapInfo

| Name | Description | Schema |
|---|---|--|
| description <i>optional</i> | Human readable description for the SAP instance. | string |
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| sapName <i>required</i> | Human readable name for the SAP instance. | string |
| sapProtocolInfo <i>required</i> | Network protocol information for this SAP. | < sapProtocolInfo > array |
| sapdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

sapProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |

| Name | Description | Schema |
|-------------------------------------|--|-------------------|
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

virtualLinkInfo

| Name | Description | Schema |
|---|---|------------------------------------|
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| linkPort <i>optional</i> | Link ports of the VL instance. Cardinality of zero indicates that no port has yet been created for the VL instance. | < linkPort > array |
| nsVirtualLinkDescId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

| Name | Description | Schema |
|--|--|---|
| nsVirtualLinkProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| resourceHandle <i>optional</i> | Identifier(s) of the virtualised network resource(s) realizing the VL instance. See note. | < resourceHandle > array |

linkPort

| Name | Description | Schema |
|--|---|---|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsCpHandle <i>optional</i> | Identifier of the CP/SAP instance to be connected to this link port. The value refers to a vnfExtCpInfo item in the VnfInstance, or a pnfExtCpInfo item in the PnfInfo, or a sapInfo item in the NS instance. There shall be at most one link port associated with any connection point instance. | < nsCpHandle > array |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

nsCpHandle

| Name | Description | Schema |
|--|---|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|---|--------|
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfInstance

| Name | Description | Schema |
|---|---|--|
| extensions <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| instantiatedVnfInfo <i>optional</i> | Information specific to an instantiated VNF instance. This attribute shall be present if the instantiateState attribute value is INSTANTIATED. | instantiatedVnfInfo |
| instantiationState <i>required</i> | The instantiation state of the VNF. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfConfigurableProperties <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfInstanceDescription <i>optional</i> | Human-readable description of the VNF instance. This attribute can be modified with the PATCH method. | string |

| Name | Description | Schema |
|--|---|--------|
| vnfInstanceName <i>optional</i> | Name of the VNF instance. This attribute can be modified with the PATCH method. | string |
| vnfPkgId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfProductName <i>required</i> | Name to identify the VNF Product. The value is copied from the VNFD. | string |
| vnfProvider <i>required</i> | Provider of the VNF and the VNFD. The value is copied from the VNFD. | string |
| vnfSoftwareVersion <i>required</i> | A Version. Representation: string of variable length. | string |
| vnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfdVersion <i>required</i> | A Version. Representation: string of variable length. | string |

instantiatedVnfInfo

| Name | Description | Schema |
|---|--|---|
| extCpInfo <i>optional</i> | Information about the external CPs exposed by the VNF instance. | < extCpInfo > array |
| extManagedVirtualLinkInfo <i>optional</i> | External virtual links the VNF instance is connected to. | < extManagedVirtualLinkInfo > array |
| extVirtualLinkInfo <i>optional</i> | Information about the external VLs the VNF instance is connected to. | < extVirtualLinkInfo > array |
| flavourId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

| Name | Description | Schema |
|--|---|--|
| localizationLanguage <i>optional</i> | Information about localization language of the VNF (includes e.g. strings in the VNFD). The localization languages supported by a VNF can be declared in the VNFD, and localization language selection can take place at instantiation time. The value shall comply with the format defined in IETF RFC 5646. | string |
| monitoringParameters <i>optional</i> | Performance metrics tracked by the VNFM (e.g. for auto-scaling purposes) as identified by the VNF provider in the VNFD. | < monitoringParameters > array |
| scaleStatus <i>optional</i> | Scale status of the VNF, one entry per aspect. Represents for every scaling aspect how "big" the VNF has been scaled w.r.t. that aspect. | < scaleStatus > array |
| virtualLinkResourceInfo <i>optional</i> | Information about the virtualised network resources used by the VLs of the VNF instance. | < virtualLinkResourceInfo > array |
| virtualStorageResourceInfo <i>optional</i> | Information on the virtualised storage resource(s) used as storage for the VNF instance. | < virtualStorageResourceInfo > array |
| vnfState <i>required</i> | | enum (STARTED, STOPPED) |
| vnfcResourceInfo <i>optional</i> | Information about the virtualised compute and storage resources used by the VNFCs of the VNF instance. | < vnfcResourceInfo > array |

extCpInfo

| Name | Description | Schema |
|--|---|--------|
| associatedVnfVirtualLinkId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| associatedVnfcCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|--|---|---|
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| extLinkPortId <i>optional</i> | This type describes the protocol layer(s) that a CP or SAP uses together with protocol-related information, like addresses. It shall comply with the provisions defined in Table 6.5.3.58-1. | extLinkPortId |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|---------------------------------------|---|--|
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extLinkId

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |

| Name | Description | Schema |
|-------------------------------------|--|-----------------------|
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extManagedVirtualLinkInfo

| Name | Description | Schema |
|---|---|---------------------------------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| networkResource <i>optional</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |

| Name | Description | Schema |
|--|--|---|
| vnfLinkPorts <i>optional</i> | Link ports of this VL. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|--|---|--------------------------------|
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

extVirtualLinkInfo

| Name | Description | Schema |
|--|---|---|
| extLinkPorts <i>optional</i> | Link ports of this VL. | < extLinkPorts > array |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

monitoringParameters

| Name | Description | Schema |
|---|--|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the VNFD. | string |
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

scaleStatus

| Name | Description | Schema |
|--------------------------------------|--|---------|
| aspectId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| scaleLevel <i>required</i> | Indicates the scale level. The minimum value shall be 0 and the maximum value shall be $\leq \text{maxScaleLevel}$ as described in the VNFD. | integer |

virtualLinkResourceInfo

| Name | Description | Schema |
|------------------------------|---|--------|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|--|---|---|
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| networkResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfLinkPorts <i>optional</i> | Links ports of this VL. Shall be present when the linkPort is used for external connectivity by the VNF (refer to VnfLinkPortInfo). May be present otherwise. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

virtualStorageResourceInfo

| Name | Description | Schema |
|------------------------------|---|--------|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|--|---|---------------------------------|
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | storageResource |
| virtualStorageDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

storageResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcResourceInfo

| Name | Description | Schema |
|--|---|--------------------------------------|
| computeResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | computeResource |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResourceIds <i>optional</i> | References to the VirtualStorage resources. The value refers to a VirtualStorageResourceInfo item in the VnfInstance. | < string > array |
| vduId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| vnfcCpInfo <i>optional</i> | CPs of the VNFC instance. Shall be present when that particular CP of the VNFC instance is associated to an external CP of the VNF instance. May be present otherwise. | < vnfcCpInfo > array |

computeResource

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcCpInfo

| Name | Description | Schema |
|--|---|---|
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfExtCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfLinkPortId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

vnffgInfo

| Name | Description | Schema |
|---|--|---|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsCpHandle <i>optional</i> | Identifiers of the CP instances attached to the constituent VNFs and PNFs or the SAP instances of the VNFFG. See note. | < nsCpHandle > array |
| nsVirtualLinkInfoId <i>optional</i> | Identifier(s) of the constituent VL instance(s) of this VNFFG instance. | < string > array |
| pnfdInfoId <i>optional</i> | Identifier(s) of the constituent PNF instance(s) of this VNFFG instance. | < string > array |
| vnfInstanceId <i>required</i> | Identifier(s) of the constituent VNF instance(s) of this VNFFG instance. | < string > array |
| vnffgdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

nsCpHandle

| Name | Description | Schema |
|--|--|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|---|--------|
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

Response 400

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 416

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Scale a NS instance.

```
POST /ns_instances/{nsInstanceId}/scale
```

Description

The POST method requests to scale a NS instance resource.

Parameters

| Type | Name | Description | Schema |
|--------|---|--|----------------------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235 | string |
| Header | Content-Type <i>required</i> | The MIME type of the body of the request. Reference: IETF RFC 7231 | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | nsInstanceId <i>required</i> | Identifier of the NS instance to be scaled. | string |
| Body | body <i>required</i> | Parameters for the scale NS operation, as defined in clause 6.5.2.13. | body |

body

| Name | Description | Schema |
|--|--|---|
| scaleNsData <i>optional</i> | This type represents the information to scale a NS. | scaleNsData |
| scaleType <i>required</i> | Indicates the type of scaling to be performed. Possible values: - SCALE_NS - SCALE_VNF | enum (SCALE_NS, SCALE_VNF) |
| scaleVnfData <i>optional</i> | The necessary information to scale the referenced NS instance. It shall be present when scaleType = SCALE_VNF. | < scaleVnfData > array |

scaleNsData

| Name | Description | Schema |
|---|---|---------------------------------------|
| additionalParamsForNs <i>optional</i> | This type defines the additional parameters for the VNF instance to be created associated with an NS instance. It shall comply with the provisions defined in Table 6.5.3.22-1. | additionalParamsForNs |

| Name | Description | Schema |
|--|--|--|
| additionalParamsForVnf <i>optional</i> | Allows the OSS/BSS to provide additional parameter(s) per VNF instance (as opposed to the NS level, which is covered in additionalParamforNs). This is for VNFs that are to be created by the NFVO as part of the NS scaling and not for existing VNF that are covered by the scaleVnfData. | < additionalParamsForVnf > array |
| locationConstraints <i>optional</i> | The location constraints for the VNF to be instantiated as part of the NS scaling. An example can be a constraint for the VNF to be in a specific geographic location. | < locationConstraints > array |
| scaleNsByStepsData <i>optional</i> | This type represents the information used to scale an NS instance by one or more scaling steps, with respect to a particular NS scaling aspect. Performing a scaling step means increasing/decreasing the capacity of an NS instance in a discrete manner, i.e. moving from one NS scale level to another. The NS scaling aspects and their corresponding NS scale levels applicable to the NS instance are declared in the NSD. | scaleNsByStepsData |
| scaleNsToLevelData <i>optional</i> | This type represents the information used to scale an NS instance to a target size. The target size is either expressed as an NS instantiation level or as a list of NS scale levels, one per NS scaling aspect, of the current DF. The NS instantiation levels, the NS scaling aspects and their corresponding NS scale levels applicable to the NS instance are declared in the NSD. | scaleNsToLevelData |
| vnfInstanceToBeAdded <i>optional</i> | An existing VNF instance to be added to the NS instance as part of the scaling operation. If needed, the VNF Profile to be used for this VNF instance may also be provided. | < vnfInstanceToBeAdded > array |
| vnfInstanceToBeRemoved <i>optional</i> | The VNF instance to be removed from the NS instance as part of the scaling operation. | < string > array |

additionalParamsForNs

| Name | Description | Schema |
|--|---|--------|
| additionalParams <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

| Name | Description | Schema |
|--|--|--------|
| vnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

additionalParamsForVnf

| Name | Description | Schema |
|--|---|--------|
| additionalParams <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

locationConstraints

| Name | Description | Schema |
|---|--|-------------------------------------|
| locationConstraints <i>optional</i> | This type represents location constraints for a VNF to be instantiated. The location constraints shall be presented as a country code, optionally followed by a civic address based on the format defined by IETF RFC 4776 [13]. | locationConstraints |
| vnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

locationConstraints

| Name | Description | Schema |
|---|---|---|
| civicAddressElement <i>optional</i> | Zero or more elements comprising the civic address. | < civicAddressElement > array |
| countryCode <i>required</i> | The two-letter ISO 3166 [29] country code in capital letters. | string |

civicAddressElement

| Name | Description | Schema |
|----------------------------------|--|---------|
| caType <i>required</i> | Describe the content type of caValue. The value of caType shall comply with Section 3.4 of IETF RFC 4776 [13]. | integer |

| Name | Description | Schema |
|-----------------------------------|---|--------|
| caValue <i>required</i> | Content of civic address element corresponding to the caType. The format caValue shall comply with Section 3.4 of IETF RFC 4776 [13]. | string |

scaleNsByStepsData

| Name | Description | Schema |
|--|---|----------------------------|
| aspectId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| numberOfSteps <i>optional</i> | The number of scaling steps to be performed. Defaults to 1. | integer |
| scalingDirection <i>required</i> | The scaling direction. Possible values are: - SCALE_IN - SCALE_OUT. | enum (SCALE_IN, SCALE_OUT) |

scaleNsToLevelData

| Name | Description | Schema |
|--|---|---------------------------------------|
| nsInstantiationLevel <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsScaleInfo <i>optional</i> | For each NS scaling aspect of the current DF, defines the target NS scale level to which the NS instance is to be scaled. | < nsScaleInfo > array |

nsScaleInfo

| Name | Description | Schema |
|---|---|--------|
| nsScaleLevelId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsScalingAspectId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

vnfInstanceToBeAdded

| Name | Description | Schema |
|---|--|--------|
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

scaleVnfData

| Name | Description | Schema |
|--|---|---|
| scaleByStepData <i>optional</i> | This type describes the information to scale a VNF instance by steps. The NFVO shall then invoke the Scale VNF operation towards the appropriate VNFM. | scaleByStepData |
| scaleToLevelData <i>optional</i> | This type describes the information used to scale a VNF instance to a target size. The target size is either expressed as an instantiation level of that DF as defined in the VNFD, or given as a list of scale levels, one per scaling aspect of that DF. Instantiation levels and scaling aspects are declared in the VNFD. The NFVO shall then invoke the ScaleVnfToLevel operation towards the appropriate VNFM.. | scaleToLevelData |
| scaleVnfType <i>required</i> | Type of the scale VNF operation requested. Allowed values are: - SCALE_OUT - SCALE_IN - SCALE_TO_INSTANTIATION_LEVEL SCALE_TO_SCALE_LEVEL(S) The set of types actually supported depends on the capabilities of the VNF being managed. | enum (SCALE_OUT, SCALE_IN, SCALE_TO_INSTANTIATION_LEVEL, SCALE_TO_SCALE_LEVEL(S)) |
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |

scaleByStepData

| Name | Description | Schema |
|--|---|--------|
| additionalParams <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| aspectId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

| Name | Description | Schema |
|---|--|---------|
| numberOfSteps <i>optional</i> | Number of scaling steps. It shall be a positive number. Defaults to 1. The VNF provider defines in the VNFD whether or not a particular VNF supports performing more than one step at a time. Such a property in the VNFD applies for all instances of a particular VNF. | integer |

scaleToLevelData

| Name | Description | Schema |
|---|---|---|
| additionalParams <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfInstantiationLevelId <i>optional</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| vnfScaleInfo <i>optional</i> | For each scaling aspect of the current deployment flavor, indicates the target scale level to which the VNF is to be scaled. | < vnfScaleInfo > array |

vnfScaleInfo

| Name | Description | Schema |
|--------------------------------------|---|---------|
| aspectId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| scaleLevel <i>required</i> | Indicates the scale level. The minimum value shall be 0 and the maximum value shall be <= maxScaleLevel as described in the VNFD. | integer |

Responses

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 202 | <p>202 ACCEPTED The request was accepted for processing, but the processing has not been completed. The response body shall be empty. The HTTP response shall include a "Location" HTTP header that contains the URI of the newly-created "NS lifecycle operation occurrence" resource corresponding to the operation.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>Location (string (url)) : The resource URI of the created NS instance.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 202 |

| HTTP Code | Description | Schema |
|-----------|---|-------------------------------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | <p>Response 400</p> |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 202

| Name | Description | Schema |
|----------------------------------|--|------------------------|
| _links <i>required</i> | Links to resources related to this resource. | _links |

| Name | Description | Schema |
|--|---|--|
| additionalAffinityOrAntiAffinityRule <i>optional</i> | Information on the additional affinity or anti-affinity rule from NS instantiation operation. Shall not conflict with rules already specified in the NSD. | < additionalAffinityOrAntiAffinityRule > array |
| flavourId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| monitoringParameter <i>optional</i> | Performance metrics tracked by the NFVO (e.g. for auto-scaling purposes) as identified by the NS designer in the NSD. | < monitoringParameter > array |
| nestedNsInstanceId <i>optional</i> | Identifier of the nested NS(s) of the NS instance. | < string > array |
| nsInstanceDescription <i>required</i> | Human readable description of the NS instance. | string |
| nsInstanceName <i>required</i> | Human readable name of the NS instance. | string |
| nsScaleStatus <i>optional</i> | Status of each NS scaling aspect declared in the applicable DF, how "big" the NS instance has been scaled w.r.t. that aspect. This attribute shall be present if the nsState attribute value is INSTANTIATED. | < nsScaleStatus > array |
| nsState <i>required</i> | The state of the NS instance. Permitted values: NOT_INSTANTIATED: The NS instance is terminated or not instantiated. INSTANTIATED: The NS instance is instantiated. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| nsdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|---|--|---|
| pnfInfo <i>optional</i> | Information on the PNF(s) that are part of the NS instance. | < pnfInfo > array |
| sapInfo <i>optional</i> | Information on the SAP(s) of the NS instance. | < sapInfo > array |
| virtualLinkInfo <i>optional</i> | Information on the VL(s) of the NS instance. This attribute shall be present if the nsState attribute value is INSTANTIATED and if the NS instance has specified connectivity. | < virtualLinkInfo > array |
| vnfInstance <i>optional</i> | Information on constituent VNF(s) of the NS instance. | < vnfInstance > array |
| vnffgInfo <i>optional</i> | Information on the VNFFG(s) of the NS instance. | < vnffgInfo > array |

_links

| Name | Description | Schema |
|---|--|---|
| heal <i>optional</i> | This type represents a link to a resource. | heal |
| instantiate <i>optional</i> | This type represents a link to a resource. | instantiate |
| nestedNsInstances <i>optional</i> | Links to resources related to this notification. | < nestedNsInstances > array |
| scale <i>optional</i> | This type represents a link to a resource. | scale |
| self <i>required</i> | This type represents a link to a resource. | self |
| terminate <i>optional</i> | This type represents a link to a resource. | terminate |
| update <i>optional</i> | This type represents a link to a resource. | update |

heal

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

instantiate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

nestedNsInstances

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

scale

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

terminate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

update

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

additionalAffinityOrAntiAffinityRule

| Name | Description | Schema |
|--|---|--|
| affinityOrAntiAffinity <i>required</i> | The type of the constraint. Permitted values: AFFINITY, ANTI_AFFINITY. | enum (AFFINITY, ANTI_AFFINITY) |
| scope <i>required</i> | Specifies the scope of the rule where the placement constraint applies. Permitted values: NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE. | enum (NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE) |
| vnfInstanceId <i>optional</i> | Reference to the existing VNF instance as the subject of the affinity or anti-affinity rule. The existing VNF instance is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfProfileId <i>optional</i> | Reference to a vnfProfile defined in the NSD. At least one VnfProfile which is used to instantiate VNF for the NS to be instantiated as the subject of the affinity or anti-affinity rule shall be present. When the VnfProfile which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VnfProfile presents is not necessary as a part of the NS to be instantiated. | < string > array |

| Name | Description | Schema |
|----------------------------------|--|------------------|
| vnfdId <i>optional</i> | Reference to a VNFD. When the VNFD which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VNFD presents is not necessary as a part of the NS to be instantiated. | < string > array |

monitoringParameter

| Name | Description | Schema |
|---|--|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the NSD. | string |
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

nsScaleStatus

| Name | Description | Schema |
|---|---|--------|
| nsScaleLevelId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsScalingAspectId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

pnfInfo

| Name | Description | Schema |
|----------------------------------|---|------------------------|
| cpInfo <i>optional</i> | This type represents the information about the external CP of the PNF. It shall comply with the provisions defined in Table 6.5.3.17-1. | cpInfo |
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| pnfName <i>optional</i> | Name of the PNF. | string |
| pnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| pnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |

cpInfo

| Name | Description | Schema |
|--|---|---|
| cpInstanceId <i>required</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| cpProtocolData <i>optional</i> | Parameters for configuring the network protocols on the CP. | < cpProtocolData > array |
| cpdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|--|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

sapInfo

| Name | Description | Schema |
|---|---|--|
| description <i>optional</i> | Human readable description for the SAP instance. | string |
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| sapName <i>required</i> | Human readable name for the SAP instance. | string |
| sapProtocolInfo <i>required</i> | Network protocol information for this SAP. | < sapProtocolInfo > array |
| sapdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

sapProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |

| Name | Description | Schema |
|---------------------------------------|---|--|
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

virtualLinkInfo

| Name | Description | Schema |
|--|---|--|
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| linkPort <i>optional</i> | Link ports of the VL instance. Cardinality of zero indicates that no port has yet been created for the VL instance. | < linkPort > array |
| nsVirtualLinkDescId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsVirtualLinkProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| resourceHandle <i>optional</i> | Identifier(s) of the virtualised network resource(s) realizing the VL instance. See note. | < resourceHandle > array |

linkPort

| Name | Description | Schema |
|------------------------------|--|--------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|---|
| nsCpHandle <i>optional</i> | Identifier of the CP/SAP instance to be connected to this link port. The value refers to a <code>vnfExtCpInfo</code> item in the <code>VnfInstance</code> , or a <code>pnfExtCpInfo</code> item in the <code>PnfInfo</code> , or a <code>sapInfo</code> item in the NS instance. There shall be at most one link port associated with any connection point instance. | < nsCpHandle > array |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

nsCpHandle

| Name | Description | Schema |
|--|---|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

resourceHandle

| Name | Description | Schema |
|--------------------------------------|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |

| Name | Description | Schema |
|--|--|--------|
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfInstance

| Name | Description | Schema |
|--------------------------------------|---|--------|
| extensions <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

| Name | Description | Schema |
|---|---|--|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| instantiatedVnfInfo <i>optional</i> | Information specific to an instantiated VNF instance. This attribute shall be present if the instantiateState attribute value is INSTANTIATED. | instantiatedVnfInfo |
| instantiationState <i>required</i> | The instantiation state of the VNF. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfConfigurableProperties <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfInstanceDescription <i>optional</i> | Human-readable description of the VNF instance. This attribute can be modified with the PATCH method. | string |
| vnfInstanceName <i>optional</i> | Name of the VNF instance. This attribute can be modified with the PATCH method. | string |
| vnfPkgId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfProductName <i>required</i> | Name to identify the VNF Product. The value is copied from the VNFD. | string |
| vnfProvider <i>required</i> | Provider of the VNF and the VNFD. The value is copied from the VNFD. | string |

| Name | Description | Schema |
|--|--|--------|
| vnfSoftwareVersion <i>required</i> | A Version. Representation: string of variable length. | string |
| vnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfdVersion <i>required</i> | A Version. Representation: string of variable length. | string |

instantiatedVnfInfo

| Name | Description | Schema |
|---|---|---|
| extCpInfo <i>optional</i> | Information about the external CPs exposed by the VNF instance. | < extCpInfo > array |
| extManagedVirtualLinkInfo <i>optional</i> | External virtual links the VNF instance is connected to. | < extManagedVirtualLinkInfo > array |
| extVirtualLinkInfo <i>optional</i> | Information about the external VLs the VNF instance is connected to. | < extVirtualLinkInfo > array |
| flavourId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| localizationLanguage <i>optional</i> | Information about localization language of the VNF (includes e.g. strings in the VNFD). The localization languages supported by a VNF can be declared in the VNFD, and localization language selection can take place at instantiation time. The value shall comply with the format defined in IETF RFC 5646. | string |
| monitoringParameters <i>optional</i> | Performance metrics tracked by the VNFM (e.g. for auto-scaling purposes) as identified by the VNF provider in the VNFD. | < monitoringParameters > array |
| scaleStatus <i>optional</i> | Scale status of the VNF, one entry per aspect. Represents for every scaling aspect how "big" the VNF has been scaled w.r.t. that aspect. | < scaleStatus > array |

| Name | Description | Schema |
|--|--|--|
| virtualLinkResourceInfo <i>optional</i> | Information about the virtualised network resources used by the VLs of the VNF instance. | < virtualLinkResourceInfo > array |
| virtualStorageResourceInfo <i>optional</i> | Information on the virtualised storage resource(s) used as storage for the VNF instance. | < virtualStorageResourceInfo > array |
| vnfState <i>required</i> | | enum (STARTED, STOPPED) |
| vnfcResourceInfo <i>optional</i> | Information about the virtualised compute and storage resources used by the VNFCs of the VNF instance. | < vnfcResourceInfo > array |

extCpInfo

| Name | Description | Schema |
|--|--|--|
| associatedVnfVirtualLinkId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| associatedVnfCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| extLinkPortId <i>optional</i> | This type describes the protocol layer(s) that a CP or SAP uses together with protocol-related information, like addresses. It shall comply with the provisions defined in Table 6.5.3.58-1. | extLinkPortId |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|------------------------------------|---|--------|
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |

| Name | Description | Schema |
|-------------------------------------|--|-----------------------|
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extLinkPortId

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extManagedVirtualLinkInfo

| Name | Description | Schema |
|--|---|---|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| networkResource <i>optional</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |
| vnfLinkPorts <i>optional</i> | Link ports of this VL. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

extVirtualLinkInfo

| Name | Description | Schema |
|--|---|---|
| extLinkPorts <i>optional</i> | Link ports of this VL. | < extLinkPorts > array |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--------------------------------------|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |

| Name | Description | Schema |
|--|--|--------|
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

monitoringParameters

| Name | Description | Schema |
|--------------------------------|---|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the VNFD. | string |

| Name | Description | Schema |
|---|--|--------|
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

scaleStatus

| Name | Description | Schema |
|--------------------------------------|---|---------|
| aspectId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| scaleLevel <i>required</i> | Indicates the scale level. The minimum value shall be 0 and the maximum value shall be \leq maxScaleLevel as described in the VNFD. | integer |

virtualLinkResourceInfo

| Name | Description | Schema |
|--|---|---|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| networkResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfLinkPorts <i>optional</i> | Links ports of this VL. Shall be present when the linkPort is used for external connectivity by the VNF (refer to VnfLinkPortInfo). May be present otherwise. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

virtualStorageResourceInfo

| Name | Description | Schema |
|--|---|---------------------------------|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | storageResource |
| virtualStorageDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

storageResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcResourceInfo

| Name | Description | Schema |
|--|---|---------------------------------|
| computeResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | computeResource |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResourceIds <i>optional</i> | References to the VirtualStorage resources. The value refers to a VirtualStorageResourceInfo item in the VnfInstance. | < string > array |
| vdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

| Name | Description | Schema |
|--------------------------------------|--|--------------------------------------|
| vnfcCpInfo <i>optional</i> | CPs of the VNFC instance. Shall be present when that particular CP of the VNFC instance is associated to an external CP of the VNF instance. May be present otherwise. | < vnfcCpInfo > array |

computeResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcCpInfo

| Name | Description | Schema |
|--|---|--|
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

| Name | Description | Schema |
|---|---|--------|
| vnfExtCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfLinkPortId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |

| Name | Description | Schema |
|-------------------------------------|--|-----------------------|
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

vnffgInfo

| Name | Description | Schema |
|--------------------------------------|--|--------------------------------------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsCpHandle <i>optional</i> | Identifiers of the CP instances attached to the constituent VNFs and PNFs or the SAP instances of the VNFFG. See note. | < nsCpHandle > array |

| Name | Description | Schema |
|---|---|------------------|
| nsVirtualLinkInfoId <i>optional</i> | Identifier(s) of the constituent VL instance(s) of this VNFFG instance. | < string > array |
| pnfdInfoId <i>optional</i> | Identifier(s) of the constituent PNF instance(s) of this VNFFG instance. | < string > array |
| vnfInstanceId <i>required</i> | Identifier(s) of the constituent VNF instance(s) of this VNFFG instance. | < string > array |
| vnffgdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

nsCpHandle

| Name | Description | Schema |
|--|---|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

Response 400

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Terminate a NS instance.

```
POST /ns_instances/{nsInstanceId}/terminate
```

Description

Terminate NS task. The POST method terminates a NS instance. This method can only be used with a NS instance in the INSTANTIATED state. Terminating a NS instance does not delete the NS instance identifier, but rather transitions the NS into the NOT_INSTANTIATED state. This method shall support the URI query parameters, request and response data structures, and response codes, as specified in the Tables 6.4.8.3.1-1 and 6.8.8.3.1-2.

Parameters

| Type | Name | Description | Schema |
|---------------|----------------------------------|--|--------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |

| Type | Name | Description | Schema |
|--------|---|---|--------|
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235 | string |
| Header | Content-Type <i>required</i> | The MIME type of the body of the request. Reference: IETF RFC 7231 | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | nsInstanceId <i>required</i> | The identifier of the NS instance to be terminated. | string |
| Body | body <i>required</i> | The terminate NS request parameters, as defined in clause 6.5.2.14. | object |

Responses

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 202 | <p>202 ACCEPTED The request was accepted for processing, but the processing has not been completed. The response body shall be empty. The HTTP response shall include a "Location" HTTP header that contains the URI of the newly-created "NS lifecycle operation occurrence" resource corresponding to the operation.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>Location (string (url)) : The resource URI of the created NS instance.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 202 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 202

| Name | Description | Schema |
|----------------------------------|--|------------------------|
| _links <i>required</i> | Links to resources related to this resource. | _links |

| Name | Description | Schema |
|--|---|--|
| additionalAffinityOrAntiAffinityRule <i>optional</i> | Information on the additional affinity or anti-affinity rule from NS instantiation operation. Shall not conflict with rules already specified in the NSD. | < additionalAffinityOrAntiAffinityRule > array |
| flavourId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| monitoringParameter <i>optional</i> | Performance metrics tracked by the NFVO (e.g. for auto-scaling purposes) as identified by the NS designer in the NSD. | < monitoringParameter > array |
| nestedNsInstanceId <i>optional</i> | Identifier of the nested NS(s) of the NS instance. | < string > array |
| nsInstanceDescription <i>required</i> | Human readable description of the NS instance. | string |
| nsInstanceName <i>required</i> | Human readable name of the NS instance. | string |
| nsScaleStatus <i>optional</i> | Status of each NS scaling aspect declared in the applicable DF, how "big" the NS instance has been scaled w.r.t. that aspect. This attribute shall be present if the nsState attribute value is INSTANTIATED. | < nsScaleStatus > array |
| nsState <i>required</i> | The state of the NS instance. Permitted values: NOT_INSTANTIATED: The NS instance is terminated or not instantiated. INSTANTIATED: The NS instance is instantiated. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| nsdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|---|--|---|
| pnfInfo <i>optional</i> | Information on the PNF(s) that are part of the NS instance. | < pnfInfo > array |
| sapInfo <i>optional</i> | Information on the SAP(s) of the NS instance. | < sapInfo > array |
| virtualLinkInfo <i>optional</i> | Information on the VL(s) of the NS instance. This attribute shall be present if the nsState attribute value is INSTANTIATED and if the NS instance has specified connectivity. | < virtualLinkInfo > array |
| vnfInstance <i>optional</i> | Information on constituent VNF(s) of the NS instance. | < vnfInstance > array |
| vnffgInfo <i>optional</i> | Information on the VNFFG(s) of the NS instance. | < vnffgInfo > array |

_links

| Name | Description | Schema |
|---|--|---|
| heal <i>optional</i> | This type represents a link to a resource. | heal |
| instantiate <i>optional</i> | This type represents a link to a resource. | instantiate |
| nestedNsInstances <i>optional</i> | Links to resources related to this notification. | < nestedNsInstances > array |
| scale <i>optional</i> | This type represents a link to a resource. | scale |
| self <i>required</i> | This type represents a link to a resource. | self |
| terminate <i>optional</i> | This type represents a link to a resource. | terminate |
| update <i>optional</i> | This type represents a link to a resource. | update |

heal

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

instantiate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

nestedNsInstances

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

scale

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

terminate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

update

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

additionalAffinityOrAntiAffinityRule

| Name | Description | Schema |
|--|---|--|
| affinityOrAntiAffinity <i>required</i> | The type of the constraint. Permitted values: AFFINITY, ANTI_AFFINITY. | enum (AFFINITY, ANTI_AFFINITY) |
| scope <i>required</i> | Specifies the scope of the rule where the placement constraint applies. Permitted values: NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE. | enum (NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE) |
| vnfInstanceId <i>optional</i> | Reference to the existing VNF instance as the subject of the affinity or anti-affinity rule. The existing VNF instance is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfProfileId <i>optional</i> | Reference to a vnfProfile defined in the NSD. At least one VnfProfile which is used to instantiate VNF for the NS to be instantiated as the subject of the affinity or anti-affinity rule shall be present. When the VnfProfile which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VnfProfile presents is not necessary as a part of the NS to be instantiated. | < string > array |

| Name | Description | Schema |
|----------------------------------|--|------------------|
| vnfdId <i>optional</i> | Reference to a VNFD. When the VNFD which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VNFD presents is not necessary as a part of the NS to be instantiated. | < string > array |

monitoringParameter

| Name | Description | Schema |
|---|--|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the NSD. | string |
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

nsScaleStatus

| Name | Description | Schema |
|---|---|--------|
| nsScaleLevelId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsScalingAspectId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

pnfInfo

| Name | Description | Schema |
|----------------------------------|---|------------------------|
| cpInfo <i>optional</i> | This type represents the information about the external CP of the PNF. It shall comply with the provisions defined in Table 6.5.3.17-1. | cpInfo |
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| pnfName <i>optional</i> | Name of the PNF. | string |
| pnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| pnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |

cpInfo

| Name | Description | Schema |
|--|---|---|
| cpInstanceId <i>required</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| cpProtocolData <i>optional</i> | Parameters for configuring the network protocols on the CP. | < cpProtocolData > array |
| cpdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|--|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

sapInfo

| Name | Description | Schema |
|---|---|--|
| description <i>optional</i> | Human readable description for the SAP instance. | string |
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| sapName <i>required</i> | Human readable name for the SAP instance. | string |
| sapProtocolInfo <i>required</i> | Network protocol information for this SAP. | < sapProtocolInfo > array |
| sapdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

sapProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |

| Name | Description | Schema |
|---------------------------------------|---|--|
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

virtualLinkInfo

| Name | Description | Schema |
|--|---|--|
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| linkPort <i>optional</i> | Link ports of the VL instance. Cardinality of zero indicates that no port has yet been created for the VL instance. | < linkPort > array |
| nsVirtualLinkDescId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsVirtualLinkProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| resourceHandle <i>optional</i> | Identifier(s) of the virtualised network resource(s) realizing the VL instance. See note. | < resourceHandle > array |

linkPort

| Name | Description | Schema |
|------------------------------|--|--------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------------------------------------|
| nsCpHandle <i>optional</i> | Identifier of the CP/SAP instance to be connected to this link port. The value refers to a <code>vnfExtCpInfo</code> item in the <code>VnfInstance</code> , or a <code>pnfExtCpInfo</code> item in the <code>PnfInfo</code> , or a <code>sapInfo</code> item in the NS instance. There shall be at most one link port associated with any connection point instance. | < <code>nsCpHandle</code> > array |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | <code>resourceHandle</code> |

nsCpHandle

| Name | Description | Schema |
|--|---|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

resourceHandle

| Name | Description | Schema |
|--------------------------------------|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |

| Name | Description | Schema |
|--|--|--------|
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfInstance

| Name | Description | Schema |
|--------------------------------------|---|--------|
| extensions <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

| Name | Description | Schema |
|---|---|--|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| instantiatedVnfInfo <i>optional</i> | Information specific to an instantiated VNF instance. This attribute shall be present if the instantiateState attribute value is INSTANTIATED. | instantiatedVnfInfo |
| instantiationState <i>required</i> | The instantiation state of the VNF. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfConfigurableProperties <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfInstanceDescription <i>optional</i> | Human-readable description of the VNF instance. This attribute can be modified with the PATCH method. | string |
| vnfInstanceName <i>optional</i> | Name of the VNF instance. This attribute can be modified with the PATCH method. | string |
| vnfPkgId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfProductName <i>required</i> | Name to identify the VNF Product. The value is copied from the VNFD. | string |
| vnfProvider <i>required</i> | Provider of the VNF and the VNFD. The value is copied from the VNFD. | string |

| Name | Description | Schema |
|--|--|--------|
| vnfSoftwareVersion <i>required</i> | A Version. Representation: string of variable length. | string |
| vnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfdVersion <i>required</i> | A Version. Representation: string of variable length. | string |

instantiatedVnfInfo

| Name | Description | Schema |
|---|---|---|
| extCpInfo <i>optional</i> | Information about the external CPs exposed by the VNF instance. | < extCpInfo > array |
| extManagedVirtualLinkInfo <i>optional</i> | External virtual links the VNF instance is connected to. | < extManagedVirtualLinkInfo > array |
| extVirtualLinkInfo <i>optional</i> | Information about the external VLs the VNF instance is connected to. | < extVirtualLinkInfo > array |
| flavourId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| localizationLanguage <i>optional</i> | Information about localization language of the VNF (includes e.g. strings in the VNFD). The localization languages supported by a VNF can be declared in the VNFD, and localization language selection can take place at instantiation time. The value shall comply with the format defined in IETF RFC 5646. | string |
| monitoringParameters <i>optional</i> | Performance metrics tracked by the VNFM (e.g. for auto-scaling purposes) as identified by the VNF provider in the VNFD. | < monitoringParameters > array |
| scaleStatus <i>optional</i> | Scale status of the VNF, one entry per aspect. Represents for every scaling aspect how "big" the VNF has been scaled w.r.t. that aspect. | < scaleStatus > array |

| Name | Description | Schema |
|--|--|--|
| virtualLinkResourceInfo <i>optional</i> | Information about the virtualised network resources used by the VLs of the VNF instance. | < virtualLinkResourceInfo > array |
| virtualStorageResourceInfo <i>optional</i> | Information on the virtualised storage resource(s) used as storage for the VNF instance. | < virtualStorageResourceInfo > array |
| vnfState <i>required</i> | | enum (STARTED, STOPPED) |
| vnfcResourceInfo <i>optional</i> | Information about the virtualised compute and storage resources used by the VNFCs of the VNF instance. | < vnfcResourceInfo > array |

extCpInfo

| Name | Description | Schema |
|--|--|--|
| associatedVnfVirtualLinkId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| associatedVnfCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| extLinkPortId <i>optional</i> | This type describes the protocol layer(s) that a CP or SAP uses together with protocol-related information, like addresses. It shall comply with the provisions defined in Table 6.5.3.58-1. | extLinkPortId |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|------------------------------------|---|--------|
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |

| Name | Description | Schema |
|-------------------------------------|--|-----------------------|
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extLinkPortId

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extManagedVirtualLinkInfo

| Name | Description | Schema |
|--|---|---|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| networkResource <i>optional</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |
| vnfLinkPorts <i>optional</i> | Link ports of this VL. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

extVirtualLinkInfo

| Name | Description | Schema |
|--|---|---|
| extLinkPorts <i>optional</i> | Link ports of this VL. | < extLinkPorts > array |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--------------------------------------|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |

| Name | Description | Schema |
|--|--|--------|
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

monitoringParameters

| Name | Description | Schema |
|--------------------------------|---|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the VNFD. | string |

| Name | Description | Schema |
|---|--|--------|
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

scaleStatus

| Name | Description | Schema |
|--------------------------------------|--|---------|
| aspectId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| scaleLevel <i>required</i> | Indicates the scale level. The minimum value shall be 0 and the maximum value shall be $\leq \text{maxScaleLevel}$ as described in the VNFD. | integer |

virtualLinkResourceInfo

| Name | Description | Schema |
|--|---|---|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| networkResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfLinkPorts <i>optional</i> | Links ports of this VL. Shall be present when the linkPort is used for external connectivity by the VNF (refer to VnfLinkPortInfo). May be present otherwise. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

virtualStorageResourceInfo

| Name | Description | Schema |
|--|---|---------------------------------|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | storageResource |
| virtualStorageDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

storageResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcResourceInfo

| Name | Description | Schema |
|--|---|---------------------------------|
| computeResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | computeResource |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResourceIds <i>optional</i> | References to the VirtualStorage resources. The value refers to a VirtualStorageResourceInfo item in the VnfInstance. | < string > array |
| vdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

| Name | Description | Schema |
|--------------------------------------|--|--------------------------------------|
| vnfcCpInfo <i>optional</i> | CPs of the VNFC instance. Shall be present when that particular CP of the VNFC instance is associated to an external CP of the VNF instance. May be present otherwise. | < vnfcCpInfo > array |

computeResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcCpInfo

| Name | Description | Schema |
|--|---|--|
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

| Name | Description | Schema |
|---|---|--------|
| vnfExtCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfLinkPortId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |

| Name | Description | Schema |
|-------------------------------------|--|-----------------------|
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

vnffgInfo

| Name | Description | Schema |
|--------------------------------------|--|--------------------------------------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsCpHandle <i>optional</i> | Identifiers of the CP instances attached to the constituent VNFs and PNFs or the SAP instances of the VNFFG. See note. | < nsCpHandle > array |

| Name | Description | Schema |
|---|---|------------------|
| nsVirtualLinkInfoId <i>optional</i> | Identifier(s) of the constituent VL instance(s) of this VNFFG instance. | < string > array |
| pnfdInfoId <i>optional</i> | Identifier(s) of the constituent PNF instance(s) of this VNFFG instance. | < string > array |
| vnfInstanceId <i>required</i> | Identifier(s) of the constituent VNF instance(s) of this VNFFG instance. | < string > array |
| vnffgdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

nsCpHandle

| Name | Description | Schema |
|--|---|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

Response 400

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Updates a NS instance.

```
POST /ns_instances/{nsInstanceId}/update
```

Description

Scale NS instance. The POST method requests to scale a NS instance resource.

Parameters

| Type | Name | Description | Schema |
|---------------|---|--|--------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235 | string |

| Type | Name | Description | Schema |
|--------|--|--|----------------------|
| Header | Content-Type <i>required</i> | The MIME type of the body of the request. Reference: IETF RFC 7231 | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | nsInstanceId <i>required</i> | Identifier of the NS instance to be updated. | string |
| Body | body <i>required</i> | Parameters for the update NS operation, as defined in clause 6.5.2.11. | body |

body

| Name | Description | Schema |
|---|--|--|
| addNestedNsData <i>optional</i> | The identifier of an existing nested NS instance to be added to (nested within) the NS instance. It shall be present only if updateType = "ADD_NESTED_NS". | < addNestedNsData > array |
| addPnfData <i>optional</i> | specifies the PNF to be added into the NS instance. It shall be present only if updateType = "ADD_PNF". | < addPnfData > array |
| addSap <i>optional</i> | Identifies a new SAP to be added to the NS instance. It shall be present only if updateType = "ADD_SAP." | < addSap > array |
| addVnfInstance <i>optional</i> | Identifies an existing VNF instance to be added to the NS instance. It shall be present only if updateType = "ADD_VNF". | < addVnfInstance > array |
| addVnffg <i>optional</i> | Specify the new VNFFG to be created to the NS Instance. It shall be present only if updateType = "ADD_VNFFG". | < addVnffg > array |

| Name | Description | Schema |
|--|--|--|
| assocNewNsdVersionData <i>optional</i> | This type specifies a new NSD version that is associated to the NS instance. After issuing the Update NS operation with <code>updateType = "AssocNewNsdVersion"</code> , the NFVO shall use the referred NSD as a basis for the given NS instance. Different versions of the same NSD have same <code>nsdInvariantId</code> , but different <code>nsdId</code> attributes, therefore if the <code>nsdInvariantId</code> of the NSD version that is to be associated to this NS instance is different from the one used before, the NFVO shall reject the request. Only new versions of the same NSD can be associated to an existing NS instance. This data type shall comply with the provisions defined in Table 6.5.3.34-1. | assocNewNsdVersionData |
| changeExtVnfConnectivityData <i>optional</i> | Specifies the new external connectivity data of the VNF instance to be changed. It shall be present only if <code>updateType = "CHANGE_EXTERNAL_VNF_CONNECTIVITY"</code> . | < changeExtVnfConnectivityData > array |
| changeNsFlavourData <i>optional</i> | This type specifies an existing NS instance for which the DF needs to be changed. This specifies the new DF, the instantiationLevel of the new DF that may be used and the additional parameters as input for the flavour change. It shall comply with the provisions defined in Table 6.5.3.39-1. | changeNsFlavourData |
| changeVnfFlavourData <i>optional</i> | Identifies the new DF of the VNF instance to be changed to. It shall be present only if <code>updateType = "CHANGE_VNF_DF"</code> . | < changeVnfFlavourData > array |
| instantiateVnfData <i>optional</i> | Identifies the new VNF to be instantiated. It can be used e.g. for the bottom-up NS creation. It shall be present only if <code>updateType = "INstantiate_VNF"</code> . | < instantiateVnfData > array |
| modifyPnfData <i>optional</i> | Specifies the PNF to be modified in the NS instance. It shall be present only if <code>updateType = "MODIFY_PNF"</code> . | < modifyPnfData > array |
| modifyVnfInfoData <i>optional</i> | Identifies the VNF information parameters and/or the configurable properties of VNF instance to be modified. It shall be present only if <code>updateType = "MODIFY_VNF_INFORMATION"</code> . | < modifyVnfInfoData > array |
| moveVnfInstanceData <i>optional</i> | Specify existing VNF instance to be moved from one NS instance to another NS instance. It shall be present only if <code>updateType = MOVE_VNF"</code> . | < moveVnfInstanceData > array |

| Name | Description | Schema |
|--|--|---|
| operateVnfData <i>optional</i> | Identifies the state of the VNF instance to be changed. It shall be present only if updateType = "OPERATE_VNF". | < operateVnfData > array |
| removeNestedNsId <i>optional</i> | The identifier of an existing nested NS instance to be removed from the NS instance. It shall be present only if updateType = "REMOVE_NESTED_NS". | < string > array |
| removePnfId <i>optional</i> | Identifier of the PNF to be deleted from the NS instance. It shall be present only if updateType = "REMOVE_PNF". | < string > array |
| removeSapId <i>optional</i> | The identifier an existing SAP to be removed from the NS instance. It shall be present only if updateType = "REMOVE_SAP." | < string > array |
| removeVnfInstancesId <i>optional</i> | Identifies an existing VNF instance to be removed from the NS instance. It contains the identifier(s) of the VNF instances to be removed. It shall be present only if updateType = "REMOVE_VNF." Note: If a VNF instance is removed from a NS and this NS was the last one for which this VNF instance was a part, the VNF instance is terminated by the NFVO. | < string > array |
| removeVnffgId <i>optional</i> | Identifier of an existing VNFFG to be removed from the NS Instance. It shall be present only if updateType = "REMOVE_VNFFG". | < string > array |

| Name | Description | Schema |
|---------------------------------------|---|---|
| updateType <i>required</i> | The type of update. It determines also which one of the following parameters is present in the operation. Possible values include: * ADD_VNF: Adding existing VNF instance(s) * REMOVE_VNF: Removing VNF instance(s) * INSTANTIATE_VNF: Instantiating new VNF(s) * CHANGE_VNF_DF: Changing VNF DF * OPERATE_VNF: Changing VNF state, * MODIFY_VNF_INFORMATION: Modifying VNF information and/or the configurable properties of VNF instance(s) * CHANGE_EXTERNAL_VNF_CONNECTIVITY: Changing the external connectivity of VNF instance(s) * ADD_SAP: Adding SAP(s) * REMOVE_SAP: Removing SAP(s) * ADD_NESTED_NS: Adding existing NS instance(s) as nested NS(s) * REMOVE_NESTED_NS: Removing existing nested NS instance(s) * ASSOC_NEW_NSD_VERSION: Associating a new NSD version to the NS instance * MOVE_VNF: Moving VNF instance(s) from one origin NS instance to another target NS instance * ADD_VNFFG: Adding VNFFG(s) * REMOVE_VNFFG: Removing VNFFG(s) * UPDATE_VNFFG: Updating VNFFG(s) * CHANGE_NS_DF: Changing NS DF * ADD_PNF: Adding PNF * MODIFY_PNF: Modifying PNF * REMOVE_PNF: Removing PNF | enum (ADD_VNF, REMOVE_VNF, INSTANTIATE_VNF, CHANGE_VNF_DF, OPERATE_VNF, MODIFY_VNF_INFORMATION, CHANGE_EXTERNAL_VNF_CONNECTIVITY, REMOVE_SAP, ADD_NESTED_NS, REMOVE_NESTED_NS, ASSOC_NEW_NSD_VERSION, MOVE_VNF, ADD_VNFFG, REMOVE_VNFFG, UPDATE_VNFFG, CHANGE_NS_DF, ADD_PNF, MODIFY_PNF, REMOVE_PNF) |
| updateVnffg <i>optional</i> | Specify the new VNFFG Information data to be updated for a VNFFG of the NS Instance. It shall be present only if updateType = "UPDATE_VNFFG". | < updateVnffg > array |

addNestedNsData

| Name | Description | Schema |
|--|---|--------|
| nestedNsInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsProfileId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |

addPnfData

| Name | Description | Schema |
|----------------------------------|--|----------------------------------|
| cpData <i>optional</i> | Address assigned for the PNF external CP(s). | < cpData > array |

| Name | Description | Schema |
|--|--|--------|
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfName <i>required</i> | Name of the PNF | string |
| pnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| pnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |

cpData

| Name | Description | Schema |
|--|---|---|
| cpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| cpProtocolData <i>required</i> | Address assigned for this CP. | < cpProtocolData > array |
| cpdId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|---------------------------------------|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

addSap

| Name | Description | Schema |
|---|---|--|
| description <i>required</i> | Human readable description for the SAP. | string |
| sapName <i>required</i> | Human readable name for the SAP. | string |
| sapProtocolData <i>optional</i> | Parameters for configuring the network protocols on the SAP. | < sapProtocolData > array |
| sapId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

sapProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|--|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |

| Name | Description | Schema |
|--------------------------------------|--|--------------|
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

addVnfInstance

| Name | Description | Schema |
|---|--|--------|
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

addVnffg

| Name | Description | Schema |
|--|--|--------|
| description <i>required</i> | Human readable description for the VNFFG. | string |
| targetNsInstanceId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| vnffgName <i>required</i> | Human readable name for the VNFFG. | string |

assocNewNsdVersionData

| Name | Description | Schema |
|------------------------------------|--|---------|
| newNsdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| sync <i>optional</i> | Specify whether the NS instance shall be automatically synchronized to the new NSD by the NFVO (in case of true value) or the NFVO shall not do any action (in case of a false value) and wait for further guidance from OSS/BSS (i.e. waiting for OSS/BSS to issue NS lifecycle management operation to explicitly add/remove VNFs and modify information of VNF instances according to the new NSD). The synchronization to the new NSD means e.g. instantiating/adding those VNFs whose VNFD is referenced by the new NSD version but not referenced by the old one, terminating/removing those VNFs whose VNFD is referenced by the old NSD version but not referenced by the new NSD version, modifying information of VNF instances to the new applicable VNFD provided in the new NSD version. A cardinality of 0 indicates that synchronization shall not be done. | boolean |

changeExtVnfConnectivityData

| Name | Description | Schema |
|--|---|---|
| additionalParams <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| extVirtualLink <i>required</i> | Information about external VLs to change (e.g. connect the VNF to). | < extVirtualLink > array |
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |

extVirtualLink

| Name | Description | Schema |
|--|---|---|
| extCps <i>required</i> | External CPs of the VNF to be connected to this external VL. | < extCps > array |
| extLinkPorts <i>optional</i> | Externally provided link ports to be used to connect external connection points to this external VL. | < extLinkPorts > array |
| extVirtualLinkId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

extCps

| Name | Description | Schema |
|------------------------------------|---|------------------------------------|
| cpConfig <i>optional</i> | List of instance data that need to be configured on the CP instances created from the respective CPD. | < cpConfig > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

cpConfig

| Name | Description | Schema |
|--|--|--|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpProtocolData <i>optional</i> | Parameters for configuring the network protocols on the link port that connects the CP to a VL. The following conditions apply to the attributes "linkPortId" and "cpProtocolData": * The "linkPortId" and "cpProtocolData" attributes shall both be absent for the deletion of an existing external CP instance addressed by cpInstanceId. * At least one of these attributes shall be present for a to-be-created external CP instance or an existing external CP instance. * If the "linkPortId" attribute is absent, the VNFM shall create a link port. * If the "cpProtocolData" attribute is absent, the "linkPortId" attribute shall be provided referencing a pre-created link port, and the VNFM can use means outside the scope of the present document to obtain the pre-configured address information for the connection point from the resource representing the link port. * If both "cpProtocolData" and "linkportId" are provided, the API consumer shall ensure that the cpProtocolData can be used with the pre-created link port referenced by "linkPortId". | < cpProtocolData > array |
| linkPortId <i>optional</i> | An identifier with the intention of being globally unique. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |

| Name | Description | Schema |
|---|---|----------------------------|
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|--|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

changeNsFlavourData

| Name | Description | Schema |
|--|--|--------|
| instantiationLevelId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| newNsFlavourId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

changeVnfFlavourData

| Name | Description | Schema |
|--|---|--|
| additionalParams <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| extManagedVirtualLinks <i>optional</i> | information about internal VLs that are managed by NFVO. | < extManagedVirtualLinks > array |
| extVirtualLinks <i>optional</i> | Information about external VLs to connect the VNF to. | < extVirtualLinks > array |
| instantiationLevelId <i>optional</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| newFlavourId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |

extManagedVirtualLinks

| Name | Description | Schema |
|---|--|--------|
| extManagedVirtualLinkId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vmfVirtualLinkDescId <i>optional</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

extVirtualLinks

| Name | Description | Schema |
|--|---|--|
| extCps <i>required</i> | External CPs of the VNF to be connected to this external VL. | < extCps > array |
| extLinkPorts <i>optional</i> | Externally provided link ports to be used to connect external connection points to this external VL. | < extLinkPorts > array |
| extVirtualLinkId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

extCps

| Name | Description | Schema |
|------------------------------------|---|------------------------------------|
| cpConfig <i>optional</i> | List of instance data that need to be configured on the CP instances created from the respective CPD. | < cpConfig > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

cpConfig

| Name | Description | Schema |
|--|--|--|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpProtocolData <i>optional</i> | Parameters for configuring the network protocols on the link port that connects the CP to a VL. The following conditions apply to the attributes "linkPortId" and "cpProtocolData": * The "linkPortId" and "cpProtocolData" attributes shall both be absent for the deletion of an existing external CP instance addressed by cpInstanceId. * At least one of these attributes shall be present for a to-be-created external CP instance or an existing external CP instance. * If the "linkPortId" attribute is absent, the VNFM shall create a link port. * If the "cpProtocolData" attribute is absent, the "linkPortId" attribute shall be provided referencing a pre-created link port, and the VNFM can use means outside the scope of the present document to obtain the pre-configured address information for the connection point from the resource representing the link port. * If both "cpProtocolData" and "linkportId" are provided, the API consumer shall ensure that the cpProtocolData can be used with the pre-created link port referenced by "linkPortId". | < cpProtocolData > array |
| linkPortId <i>optional</i> | An identifier with the intention of being globally unique. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |

| Name | Description | Schema |
|---|---|----------------------------|
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|--|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

instantiateVnfData

| Name | Description | Schema |
|---|---|--|
| additionalParams <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| extManagedVirtualLinks <i>optional</i> | Information about internal VLs that are managed by other entities than the VNFM. | < extManagedVirtualLinks > array |
| extVirtualLinks <i>optional</i> | Information about external VLs to connect the VNF to. | < extVirtualLinks > array |
| localizationLanguage <i>optional</i> | Localization language of the VNF to be instantiated. The value shall comply with the format defined in IETF RFC 5646 [16]. | string |
| vnfFlavourId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| vnfInstanceDescription <i>optional</i> | Human-readable description of the VNF instance to be created. | string |
| vnfInstanceName <i>optional</i> | Human-readable name of the VNF instance to be created. | string |
| vnfInstantiationLevelId <i>optional</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| vnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |

extManagedVirtualLinks

| Name | Description | Schema |
|---|--|--------|
| extManagedVirtualLinkId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vmfVirtualLinkDescId <i>optional</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

extVirtualLinks

| Name | Description | Schema |
|--|---|--|
| extCps <i>required</i> | External CPs of the VNF to be connected to this external VL. | < extCps > array |
| extLinkPorts <i>optional</i> | Externally provided link ports to be used to connect external connection points to this external VL. | < extLinkPorts > array |
| extVirtualLinkId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

extCps

| Name | Description | Schema |
|------------------------------------|---|------------------------------------|
| cpConfig <i>optional</i> | List of instance data that need to be configured on the CP instances created from the respective CPD. | < cpConfig > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

cpConfig

| Name | Description | Schema |
|--|--|--|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpProtocolData <i>optional</i> | Parameters for configuring the network protocols on the link port that connects the CP to a VL. The following conditions apply to the attributes "linkPortId" and "cpProtocolData": * The "linkPortId" and "cpProtocolData" attributes shall both be absent for the deletion of an existing external CP instance addressed by cpInstanceId. * At least one of these attributes shall be present for a to-be-created external CP instance or an existing external CP instance. * If the "linkPortId" attribute is absent, the VNFM shall create a link port. * If the "cpProtocolData" attribute is absent, the "linkPortId" attribute shall be provided referencing a pre-created link port, and the VNFM can use means outside the scope of the present document to obtain the pre-configured address information for the connection point from the resource representing the link port. * If both "cpProtocolData" and "linkportId" are provided, the API consumer shall ensure that the cpProtocolData can be used with the pre-created link port referenced by "linkPortId". | < cpProtocolData > array |
| linkPortId <i>optional</i> | An identifier with the intention of being globally unique. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |

| Name | Description | Schema |
|---|---|----------------------------|
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|--|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

modifyPnfData

| Name | Description | Schema |
|-----------------------------------|--|----------------------------------|
| cpData <i>optional</i> | Address assigned for the PNF external CP(s). | < cpData > array |
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfName <i>optional</i> | Name of the PNF. | string |

cpData

| Name | Description | Schema |
|--|---|--|
| cpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| cpProtocolData <i>required</i> | Address assigned for this CP. | < cpProtocolData > array |
| cpdId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|---------------------------------------|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

modifyVnfInfoData

| Name | Description | Schema |
|---|---|--------|
| Extensions <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| Metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfConfigurableProperties <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfInstanceDescription <i>optional</i> | New value of the "vnfInstanceDescription" attribute in "VnfInstance", or "null" to remove the attribute. | string |
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfInstanceName <i>optional</i> | New value of the "vnfInstanceName" attribute in "VnfInstance", or "null" to remove the attribute. | string |
| vnfPkgId <i>optional</i> | An identifier with the intention of being globally unique. | string |

moveVnfInstanceData

| Name | Description | Schema |
|--|--|------------------|
| targetNsInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfInstanceId <i>optional</i> | Specify the VNF instance that is moved. | < string > array |

operateVnfData

| Name | Description | Schema |
|---|--|---------------------------|
| changeStateTo <i>required</i> | STARTED - The VNF instance is up and running. STOPPED - The VNF instance has been shut down. | enum (STARTED, STOPPED) |
| gracefulStopTimeout <i>optional</i> | The time interval (in seconds) to wait for the VNF to be taken out of service during graceful stop, before stopping the VNF. | integer |
| stopType <i>optional</i> | <ul style="list-style-type: none"> • FORCEFUL: The VNFM will stop the VNF immediately after accepting the request. • GRACEFUL: The VNFM will first arrange to take the VNF out of service after accepting the request. Once that operation is successful or once the timer value specified in the "gracefulStopTimeout" attribute expires, the VNFM will stop the VNF. | enum (FORCEFUL, GRACEFUL) |
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |

updateVnffg

| Name | Description | Schema |
|-------------------------------------|--|-------------------------------|
| nfp <i>optional</i> | Indicate the desired new NFP(s) for a given VNFFG after the operations of addition/removal of NS components (e.g. VNFs, VLs, etc.) have been completed, or indicate the updated or newly created NFP classification and selection rule which applied to an existing NFP. | < nfp > array |
| nfpInfoId <i>optional</i> | Identifier(s) of the NFP to be deleted from a given VNFFG. | < string > array |

| Name | Description | Schema |
|---------------------------------------|---|--------|
| vnffgInfoId <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |

nfp

| Name | Description | Schema |
|---------------------------------------|---|-----------------------------------|
| cpGroup <i>optional</i> | Group(s) of CPs and/or SAPs which the NFP passes by. Cardinality can be 0 if only updated or newly created NFP classification and selection rule which applied to an existing NFP is provided. At least a CP or an nfpRule shall be present. When multiple identifiers are included, the position of the identifier in the cpGroup value specifies the position of the group in the path. | < cpGroup > array |
| description <i>optional</i> | Human readable description for the NFP. It shall be present for the new NFP, and it may be present otherwise. It shall be present for the new NFP, and it may be present otherwise. | string |
| nfpInfoId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| nfpName <i>optional</i> | Human readable name for the NFP. It shall be present for the new NFP, and it may be present otherwise. It shall be present for the new NFP, and it may be present otherwise. | string |
| nfpRule <i>optional</i> | The NfpRule data type is an expression of the conditions that shall be met in order for the NFP to be applicable to the packet. The condition acts as a flow classifier and it is met only if all the values expressed in the condition are matched by those in the packet. It shall comply with the provisions defined in Table 6.5.3.40-1. | nfpRule |

cpGroup

| Name | Description | Schema |
|--------------------------------------|--|--------------------------------------|
| cpPairInfo <i>optional</i> | One or more pair(s) of ingress and egress CPs or SAPs which the NFP passes by. All CP or SAP pairs in a group shall be instantiated from connection point descriptors or service access point descriptors referenced in the corresponding NfpPositionDesc. | < cpPairInfo > array |

| Name | Description | Schema |
|--|--|--|
| forwardingBehaviour <i>optional</i> | Identifies a rule to apply to forward traffic to the ingress CPs or SAPs of the group. Permitted values: * ALL = Traffic flows shall be forwarded simultaneously to all CPs or SAPs of the group. * LB = Traffic flows shall be forwarded to one CP or SAP of the group selected based on a loadbalancing algorithm. | enum (ALL, LB) |
| forwardingBehaviourInputParameters <i>optional</i> | This type represents provides input parameters to configure the forwarding behaviour. It shall comply with the provisions defined in Table 6.5.3.73-1. | forwardingBehaviourInputParameters |

cpPairInfo

| Name | Description | Schema |
|---------------------------------------|--|------------------|
| pnfExtCpIds <i>optional</i> | Identifier(s) of the PNF CP(s) which form the pair. The presence of a single vnfExpCpId, pnfExtCpId, or sapId occurrence indicates that the CP or SAP is used both as an ingress and egress port at a particular NFP position. | < string > array |
| sapIds <i>optional</i> | Identifier(s) of the SAP(s) which form the pair. The presence of a single vnfExpCpId, pnfExtCpId, or sapId occurrence indicates that the CP or SAP is used both as an ingress and egress port at a particular NFP position. | < string > array |
| vnfExtCpIds <i>optional</i> | Identifier(s) of the VNF CP(s) which form the pair. The presence of a single vnfExpCpId, pnfExtCpId, or sapId occurrence indicates that the CP or SAP is used both as an ingress and egress port at a particular NFP position. | < string > array |

forwardingBehaviourInputParameters

| Name | Description | Schema |
|--|--|-------------------|
| algorithmWeights <i>optional</i> | Percentage of messages sent to a CP instance. May be included if applicable to the algorithm. If applicable to the algorithm but not provided, default values determined by the VIM or NFVI are expected to be used. Weight applies to the CP instances in the order they have been created. | < integer > array |

| Name | Description | Schema |
|---|--|--|
| algorithmName <i>optional</i> | May be included if forwarding behaviour is equal to LB. Shall not be included otherwise. Permitted values: * ROUND_ROBIN * LEAST_CONNECTION * LEAST_TRAFFIC * LEAST_RESPONSE_TIME, * CHAINED_FAILOVER * SOURCE_IP_HASH * SOURCE_MAC_HASH | enum (ROUND_ROBIN, LEAST_CONNECTION, LEAST_TRAFFIC, LEAST_RESPONSE_TIME, CHAINED_FAILOVER, SOURCE_IP_HASH, SOURCE_MAC_HASH) |

nfpRule

| Name | Description | Schema |
|--|---|---|
| destinationIpAddressPrefix <i>optional</i> | An IPV4 or IPV6 address range in CIDR format. For IPV4 address range, refer to IETF RFC 4632 [12]. For IPV6 address range, refer to IETF RFC 4291. | string |
| destinationPortRange <i>optional</i> | The PortRange data type provides the lower and upper bounds of a range of Internet ports. It shall comply with the provisions defined in Table 6.5.3.42-1. | destinationPortRange |
| dscp <i>optional</i> | For IPv4 [7] a string of "0" and "1" digits that corresponds to the 6-bit Differentiated Services Code Point (DSCP) field of the IP header. For IPv6 [28] a string of "0" and "1" digits that corresponds to the 6 differentiated services bits of the traffic class header field | string |
| etherDestinationAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| etherSourceAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| etherType <i>optional</i> | Human readable description for the VNFFG. | enum (IPV4, IPV6) |
| extendedCriteria <i>optional</i> | Indicates values of specific bits in a frame. | < extendedCriteria > array |

| Name | Description | Schema |
|---|---|---------------------------------|
| protocol <i>optional</i> | Indicates the L4 protocol, For IPv4 [7] this corresponds to the field called "Protocol" to identify the next level protocol. For IPv6 [28] this corresponds to the field is called the "Next Header" field. Permitted values: Any keyword defined in the IANA protocol registry [1], e.g.: TCP UDP ICMP | enum (TCP, UDP, ICMP) |
| sourceIpAddressPrefix <i>optional</i> | An IPV4 or IPV6 address range in CIDR format. For IPV4 address range, refer to IETF RFC 4632 [12]. For IPV6 address range, refer to IETF RFC 4291. | string |
| sourcePortRange <i>optional</i> | The PortRange data type provides the lower and upper bounds of a range of Internet ports. It shall comply with the provisions defined in Table 6.5.3.42-1. | sourcePortRange |
| vlanTag <i>optional</i> | Indicates a VLAN identifier in an IEEE 802.1Q-2014 tag [6] Multiple tags can be included for QinQ stacking. See note. | < string > array |

destinationPortRange

| Name | Description | Schema |
|-------------------------------------|---|---------|
| lowerPort <i>required</i> | Identifies the lower bound of the port range. upperPort Integer Minimum value : 0 | integer |
| upperPort <i>required</i> | Identifies the upper bound of the port range. Minimum value : 0 | integer |

extendedCriteria

| Name | Description | Schema |
|---|--|---------|
| length <i>required</i> | Indicates the number of bits to be matched. | integer |
| startingPoint <i>required</i> | Indicates the offset between the last bit of the source mac address and the first bit of the sequence of bits to be matched. | integer |
| value <i>required</i> | Provide the sequence of bit values to be matched. | string |

sourcePortRange

| Name | Description | Schema |
|-------------------------------------|--|---------|
| lowerPort <i>required</i> | Identifies the lower bound of the port range. upperPort Integer Minimum value : 0 | integer |
| upperPort <i>required</i> | Identifies the upper bound of the port range. Minimum value : 0 | integer |

Responses

| HTTP Code | Description | Schema |
|------------|--|------------------------------|
| 202 | <p>202 ACCEPTED The request was accepted for processing, but the processing has not been completed. The response body shall be empty. The HTTP response shall include a "Location" HTTP header that contains the URI of the newly-created "NS lifecycle operation occurrence" resource corresponding to the operation.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>Location (string (url)) : The resource URI of the created NS instance.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 202 |

| HTTP Code | Description | Schema |
|-----------|---|-------------------------------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | <p>Response 400</p> |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 202

| Name | Description | Schema |
|----------------------------------|--|------------------------|
| _links <i>required</i> | Links to resources related to this resource. | _links |

| Name | Description | Schema |
|--|---|--|
| additionalAffinityOrAntiAffinityRule <i>optional</i> | Information on the additional affinity or anti-affinity rule from NS instantiation operation. Shall not conflict with rules already specified in the NSD. | < additionalAffinityOrAntiAffinityRule > array |
| flavourId <i>optional</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| monitoringParameter <i>optional</i> | Performance metrics tracked by the NFVO (e.g. for auto-scaling purposes) as identified by the NS designer in the NSD. | < monitoringParameter > array |
| nestedNsInstanceId <i>optional</i> | Identifier of the nested NS(s) of the NS instance. | < string > array |
| nsInstanceDescription <i>required</i> | Human readable description of the NS instance. | string |
| nsInstanceName <i>required</i> | Human readable name of the NS instance. | string |
| nsScaleStatus <i>optional</i> | Status of each NS scaling aspect declared in the applicable DF, how "big" the NS instance has been scaled w.r.t. that aspect. This attribute shall be present if the nsState attribute value is INSTANTIATED. | < nsScaleStatus > array |
| nsState <i>required</i> | The state of the NS instance. Permitted values: NOT_INSTANTIATED: The NS instance is terminated or not instantiated. INSTANTIATED: The NS instance is instantiated. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| nsdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|---|--|---|
| pnfInfo <i>optional</i> | Information on the PNF(s) that are part of the NS instance. | < pnfInfo > array |
| sapInfo <i>optional</i> | Information on the SAP(s) of the NS instance. | < sapInfo > array |
| virtualLinkInfo <i>optional</i> | Information on the VL(s) of the NS instance. This attribute shall be present if the nsState attribute value is INSTANTIATED and if the NS instance has specified connectivity. | < virtualLinkInfo > array |
| vnfInstance <i>optional</i> | Information on constituent VNF(s) of the NS instance. | < vnfInstance > array |
| vnffgInfo <i>optional</i> | Information on the VNFFG(s) of the NS instance. | < vnffgInfo > array |

_links

| Name | Description | Schema |
|---|--|---|
| heal <i>optional</i> | This type represents a link to a resource. | heal |
| instantiate <i>optional</i> | This type represents a link to a resource. | instantiate |
| nestedNsInstances <i>optional</i> | Links to resources related to this notification. | < nestedNsInstances > array |
| scale <i>optional</i> | This type represents a link to a resource. | scale |
| self <i>required</i> | This type represents a link to a resource. | self |
| terminate <i>optional</i> | This type represents a link to a resource. | terminate |
| update <i>optional</i> | This type represents a link to a resource. | update |

heal

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

instantiate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

nestedNsInstances

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

scale

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

terminate

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

update

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

additionalAffinityOrAntiAffinityRule

| Name | Description | Schema |
|--|---|--|
| affinityOrAntiAffinity <i>required</i> | The type of the constraint. Permitted values: AFFINITY, ANTI_AFFINITY. | enum (AFFINITY, ANTI_AFFINITY) |
| scope <i>required</i> | Specifies the scope of the rule where the placement constraint applies. Permitted values: NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE. | enum (NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE) |
| vnfInstanceId <i>optional</i> | Reference to the existing VNF instance as the subject of the affinity or anti-affinity rule. The existing VNF instance is not necessary as a part of the NS to be instantiated. | < string > array |
| vnfProfileId <i>optional</i> | Reference to a vnfProfile defined in the NSD. At least one VnfProfile which is used to instantiate VNF for the NS to be instantiated as the subject of the affinity or anti-affinity rule shall be present. When the VnfProfile which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VnfProfile presents is not necessary as a part of the NS to be instantiated. | < string > array |

| Name | Description | Schema |
|----------------------------------|--|------------------|
| vnfdId <i>optional</i> | Reference to a VNFD. When the VNFD which is not used to instantiate VNF, it presents all VNF instances of this type as the subjects of the affinity or anti-affinity rule. The VNF instance which the VNFD presents is not necessary as a part of the NS to be instantiated. | < string > array |

monitoringParameter

| Name | Description | Schema |
|---|--|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the NSD. | string |
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

nsScaleStatus

| Name | Description | Schema |
|---|---|--------|
| nsScaleLevelId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsScalingAspectId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

pnfInfo

| Name | Description | Schema |
|----------------------------------|---|------------------------|
| cpInfo <i>optional</i> | This type represents the information about the external CP of the PNF. It shall comply with the provisions defined in Table 6.5.3.17-1. | cpInfo |
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| pnfName <i>optional</i> | Name of the PNF. | string |
| pnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| pnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfdInfoId <i>required</i> | An identifier with the intention of being globally unique. | string |

cpInfo

| Name | Description | Schema |
|--|---|---|
| cpInstanceId <i>required</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| cpProtocolData <i>optional</i> | Parameters for configuring the network protocols on the CP. | < cpProtocolData > array |
| cpdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

cpProtocolData

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>optional</i> | This type represents network address data for IP over Ethernet. | ipOverEthernet |
| layerProtocol <i>required</i> | Identifier of layer(s) and protocol(s). Permitted values: IP_OVER_ETHERNET. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|---------------------------------------|--|--|
| ipAddresses <i>optional</i> | List of IP addresses to assign to the CP instance. Each entry represents IP address data for fixed or dynamic IP address assignment per subnet. If this attribute is not present, no IP address shall be assigned. | < ipAddresses > array |
| macAddress <i>optional</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

ipAddresses

| Name | Description | Schema |
|---|---|------------------------------|
| addressRange <i>optional</i> | An IP address range to be used, e.g. in case of egress connections. In case this attribute is present, IP addresses from the range will be used. | addressRange |
| fixedAddresses <i>optional</i> | Fixed addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | < string (IP) > array |
| numDynamicAddresses <i>optional</i> | Number of dynamic addresses to assign (from the subnet defined by "subnetId" if provided). Exactly one of "fixedAddresses", "numDynamicAddresses" or "ipAddressRange" shall be present. | integer |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

sapInfo

| Name | Description | Schema |
|---|---|--|
| description <i>optional</i> | Human readable description for the SAP instance. | string |
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| sapName <i>required</i> | Human readable name for the SAP instance. | string |
| sapProtocolInfo <i>required</i> | Network protocol information for this SAP. | < sapProtocolInfo > array |
| sapdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

sapProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |

| Name | Description | Schema |
|---------------------------------------|---|--|
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

virtualLinkInfo

| Name | Description | Schema |
|--|---|--|
| id <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| linkPort <i>optional</i> | Link ports of the VL instance. Cardinality of zero indicates that no port has yet been created for the VL instance. | < linkPort > array |
| nsVirtualLinkDescId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsVirtualLinkProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| resourceHandle <i>optional</i> | Identifier(s) of the virtualised network resource(s) realizing the VL instance. See note. | < resourceHandle > array |

linkPort

| Name | Description | Schema |
|------------------------------|--|--------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|---|
| nsCpHandle <i>optional</i> | Identifier of the CP/SAP instance to be connected to this link port. The value refers to a <code>vnfExtCpInfo</code> item in the <code>VnfInstance</code> , or a <code>pnfExtCpInfo</code> item in the <code>PnfInfo</code> , or a <code>sapInfo</code> item in the NS instance. There shall be at most one link port associated with any connection point instance. | < nsCpHandle > array |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

nsCpHandle

| Name | Description | Schema |
|--|---|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

resourceHandle

| Name | Description | Schema |
|--------------------------------------|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |

| Name | Description | Schema |
|--|--|--------|
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfInstance

| Name | Description | Schema |
|--------------------------------------|---|--------|
| extensions <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

| Name | Description | Schema |
|---|---|--|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| instantiatedVnfInfo <i>optional</i> | Information specific to an instantiated VNF instance. This attribute shall be present if the instantiateState attribute value is INSTANTIATED. | instantiatedVnfInfo |
| instantiationState <i>required</i> | The instantiation state of the VNF. | enum (NOT_INSTANTIATED, INSTANTIATED) |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfConfigurableProperties <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfInstanceDescription <i>optional</i> | Human-readable description of the VNF instance. This attribute can be modified with the PATCH method. | string |
| vnfInstanceName <i>optional</i> | Name of the VNF instance. This attribute can be modified with the PATCH method. | string |
| vnfPkgId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfProductName <i>required</i> | Name to identify the VNF Product. The value is copied from the VNFD. | string |
| vnfProvider <i>required</i> | Provider of the VNF and the VNFD. The value is copied from the VNFD. | string |

| Name | Description | Schema |
|--|--|--------|
| vnfSoftwareVersion <i>required</i> | A Version. Representation: string of variable length. | string |
| vnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfdVersion <i>required</i> | A Version. Representation: string of variable length. | string |

instantiatedVnfInfo

| Name | Description | Schema |
|---|---|---|
| extCpInfo <i>optional</i> | Information about the external CPs exposed by the VNF instance. | < extCpInfo > array |
| extManagedVirtualLinkInfo <i>optional</i> | External virtual links the VNF instance is connected to. | < extManagedVirtualLinkInfo > array |
| extVirtualLinkInfo <i>optional</i> | Information about the external VLs the VNF instance is connected to. | < extVirtualLinkInfo > array |
| flavourId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| localizationLanguage <i>optional</i> | Information about localization language of the VNF (includes e.g. strings in the VNFD). The localization languages supported by a VNF can be declared in the VNFD, and localization language selection can take place at instantiation time. The value shall comply with the format defined in IETF RFC 5646. | string |
| monitoringParameters <i>optional</i> | Performance metrics tracked by the VNFM (e.g. for auto-scaling purposes) as identified by the VNF provider in the VNFD. | < monitoringParameters > array |
| scaleStatus <i>optional</i> | Scale status of the VNF, one entry per aspect. Represents for every scaling aspect how "big" the VNF has been scaled w.r.t. that aspect. | < scaleStatus > array |

| Name | Description | Schema |
|--|--|--|
| virtualLinkResourceInfo <i>optional</i> | Information about the virtualised network resources used by the VLs of the VNF instance. | < virtualLinkResourceInfo > array |
| virtualStorageResourceInfo <i>optional</i> | Information on the virtualised storage resource(s) used as storage for the VNF instance. | < virtualStorageResourceInfo > array |
| vnfState <i>required</i> | | enum (STARTED, STOPPED) |
| vnfcResourceInfo <i>optional</i> | Information about the virtualised compute and storage resources used by the VNFCs of the VNF instance. | < vnfcResourceInfo > array |

extCpInfo

| Name | Description | Schema |
|--|--|--|
| associatedVnfVirtualLinkId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| associatedVnfCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| extLinkPortId <i>optional</i> | This type describes the protocol layer(s) that a CP or SAP uses together with protocol-related information, like addresses. It shall comply with the provisions defined in Table 6.5.3.58-1. | extLinkPortId |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

| Name | Description | Schema |
|------------------------------------|---|--------|
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |

| Name | Description | Schema |
|-------------------------------------|--|-----------------------|
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extLinkPortId

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|--|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

extManagedVirtualLinkInfo

| Name | Description | Schema |
|--|---|---|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| networkResource <i>optional</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |
| vnfLinkPorts <i>optional</i> | Link ports of this VL. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

extVirtualLinkInfo

| Name | Description | Schema |
|--|---|---|
| extLinkPorts <i>optional</i> | Link ports of this VL. | < extLinkPorts > array |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--------------------------------------|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |

| Name | Description | Schema |
|--|--|--------|
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

monitoringParameters

| Name | Description | Schema |
|--------------------------------|---|--------|
| id <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| name <i>optional</i> | Human readable name of the monitoring parameter, as defined in the VNFD. | string |

| Name | Description | Schema |
|---|--|--------|
| performanceMetric <i>required</i> | Performance metric that is monitored. This attribute shall contain the related "Measurement Name" value as defined in clause 7.2 of ETSI GS NFV-IFA 027. | string |

scaleStatus

| Name | Description | Schema |
|--------------------------------------|--|---------|
| aspectId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| scaleLevel <i>required</i> | Indicates the scale level. The minimum value shall be 0 and the maximum value shall be $\leq \text{maxScaleLevel}$ as described in the VNFD. | integer |

virtualLinkResourceInfo

| Name | Description | Schema |
|--|---|---|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| networkResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | networkResource |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfLinkPorts <i>optional</i> | Links ports of this VL. Shall be present when the linkPort is used for external connectivity by the VNF (refer to VnfLinkPortInfo). May be present otherwise. | < vnfLinkPorts > array |
| vnfVirtualLinkDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

networkResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| cpInstanceType <i>optional</i> | Type of the CP instance that is identified by cpInstanceId. Shall be present if "cpInstanceId" is present, and shall be absent otherwise. Permitted values: * VNFC_CP: The link port is connected to a VNFC CP * EXT_CP: The link port is associated to an external CP. | enum (VNFC_CP, EXT_CP) |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

virtualStorageResourceInfo

| Name | Description | Schema |
|--|---|---------------------------------|
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | storageResource |
| virtualStorageDescId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

storageResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcResourceInfo

| Name | Description | Schema |
|--|---|---------------------------------|
| computeResource <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | computeResource |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| reservationId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| storageResourceIds <i>optional</i> | References to the VirtualStorage resources. The value refers to a VirtualStorageResourceInfo item in the VnfInstance. | < string > array |
| vdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |

| Name | Description | Schema |
|--------------------------------------|--|--------------------------------------|
| vnfcCpInfo <i>optional</i> | CPs of the VNFC instance. Shall be present when that particular CP of the VNFC instance is associated to an external CP of the VNF instance. May be present otherwise. | < vnfcCpInfo > array |

computeResource

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

vnfcCpInfo

| Name | Description | Schema |
|--|---|--|
| cpProtocolInfo <i>optional</i> | Network protocol information for this CP. | < cpProtocolInfo > array |
| cpdId <i>required</i> | Identifier of the VNF Virtual Link Descriptor (VLD) in the VNFD. | string |
| id <i>required</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |

| Name | Description | Schema |
|---|---|--------|
| vnfExtCpId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfLinkPortId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |

cpProtocolInfo

| Name | Description | Schema |
|--|---|--------------------------------|
| ipOverEthernet <i>required</i> | This type represents information about a network address that has been assigned. It shall comply with the provisions defined in Table 6.5.3.18-1. | ipOverEthernet |
| layerProtocol <i>required</i> | The identifier of layer(s) and protocol(s) associated to the network address information. Permitted values: IP_OVER_ETHERNET See note. | enum (IP_OVER_ETHERNET) |

ipOverEthernet

| Name | Description | Schema |
|--|---|--|
| addressRange <i>required</i> | An IP address range used, e.g. in case of egress connections. See note. | addressRange |
| addresses <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| ipAddresses <i>required</i> | Addresses assigned to the CP instance. Each entry represents IP addresses assigned by fixed or dynamic IP address assignment per subnet. | < ipAddresses > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| macAddress <i>required</i> | A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons. | string (MAC) |

| Name | Description | Schema |
|--------------------------------------|---|-----------------|
| maxAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>optional</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| subnetId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>optional</i> | The type of the IP addresses | enum (PV4, PV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

ipAddresses

| Name | Description | Schema |
|--|---|------------------------------|
| addressRange <i>optional</i> | An IP address range used, e.g., in case of egress connections. Exactly one of "addresses" or "addressRange" shall be present. | addressRange |

| Name | Description | Schema |
|-------------------------------------|--|-----------------------|
| addresses <i>optional</i> | Fixed addresses assigned (from the subnet defined by "subnetId" if provided). | < string (IP) > array |
| isDynamic <i>optional</i> | Indicates whether this set of addresses was assigned dynamically (true) or based on address information provided as input from the API consumer (false). Shall be present if "addresses" is present and shall be absent otherwise. | boolean |
| subnetId <i>optional</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| type <i>required</i> | The type of the IP addresses. Permitted values: IPV4, IPV6. | enum (IPV4, IPV6) |

addressRange

| Name | Description | Schema |
|--------------------------------------|---|-------------|
| maxAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |
| minAddress <i>required</i> | An IPV4 or IPV6 address. Representation: In case of an IPV4 address, string that consists of four decimal integers separated by dots, each integer ranging from 0 to 255. In case of an IPV6 address, string that consists of groups of zero to four hexadecimal digits, separated by colons. | string (IP) |

vnffgInfo

| Name | Description | Schema |
|--------------------------------------|--|--------------------------------------|
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsCpHandle <i>optional</i> | Identifiers of the CP instances attached to the constituent VNFs and PNFs or the SAP instances of the VNFFG. See note. | < nsCpHandle > array |

| Name | Description | Schema |
|---|---|------------------|
| nsVirtualLinkInfoId <i>optional</i> | Identifier(s) of the constituent VL instance(s) of this VNFFG instance. | < string > array |
| pnfdInfoId <i>optional</i> | Identifier(s) of the constituent PNF instance(s) of this VNFFG instance. | < string > array |
| vnfInstanceId <i>required</i> | Identifier(s) of the constituent VNF instance(s) of this VNFFG instance. | < string > array |
| vnffgdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

nsCpHandle

| Name | Description | Schema |
|--|---|--------|
| nsInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| nsSapInstanceId <i>optional</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| pnfExtCpInstanceId <i>optional</i> | An Identifier that is unique within respect to a PNF. Representation: string of variable length. | string |
| pnfInfoId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vnfExtCpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| vnfInstanceId <i>optional</i> | An identifier with the intention of being globally unique. | string |

Response 400

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Query multiple NS LCM operation occurrences.

```
GET /ns_lcm_op_occs
```

Description

Get Operation Status. The client can use this method to query status information about multiple NS lifecycle management operation occurrences. This method shall follow the provisions specified in the Tables 6.4.9.3.2-1 and 6.4.9.3.2-2 for URI query parameters, request and response data structures, and response codes.

Parameters

| Type | Name | Description | Schema |
|---------------|----------------------------------|--|--------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |

| Type | Name | Description | Schema |
|--------|---|---|--------|
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235 | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Query | exclude_defaults <i>optional</i> | Indicates to exclude the following complex attributes from the response. See clause 4.3.3 for details. The NFVO shall support this parameter. The following attributes shall be excluded from the NsLcmOpOcc structure in the response body if this parameter is provided: - operationParams - changedVnfInfo - error - resourceChanges | string |
| Query | exclude_fields <i>optional</i> | Complex attributes to be excluded from the response. See clause 4.3.3 for details. The NFVO should support this parameter. | string |
| Query | fields <i>optional</i> | Complex attributes to be included into the response. See clause 4.3.3 for details. The NFVO should support this parameter. | string |
| Query | filter <i>optional</i> | Attribute-based filtering expression according to clause 4.3.2. The NFVO shall support receiving this parameter as part of the URI query string. The OSS/BSS may supply this parameter. All attribute names that appear in the NsLcmOpOcc and in data types referenced from it shall be supported by the NFVO in the filter expression. | string |
| Query | nextpage_operation_marker <i>optional</i> | Marker to obtain the next page of a paged response. Shall be supported by the NFVO if the NFVO supports alternative 2 (paging) according to clause 4.7.2.1 for this resource. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|---|---|
| 200 | <p>200 OK Status information for zero or more NS lifecycle management operation occurrences was queried successfully. The response body shall contain in an array the representations of zero or more NS instances, as defined in clause 5.5.2.13. If the NFVO supports alternative 2 (paging) according to clause 4.7.2.1 for this resource, inclusion of the Link HTTP header in this response shall follow the provisions in clause 4.7.2.3.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> <p>Link (string) : Reference to other resources. Used for paging in the present document, see clause 4.7.2.1.</p> | < Response 200 > array |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|--------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 200

| Name | Description | Schema |
|-------------------------------|---|------------|
| NsLcmOpOcc <i>optional</i> | This type represents a request a NS lifecycle operation occurrence. It shall comply with the provisions defined in Table 6.5.2.3-1. | NsLcmOpOcc |

| Name | Description | Schema |
|---|--|---------------------------|
| _links <i>required</i> | Links to resources related to this resource. | _links |
| cancelMode <i>optional</i> | Cancellation mode. The NFVO shall not start any new VNF lifecycle management and resource management operation, and shall wait for the ongoing VNF lifecycle management and resource management operations in the underlying system, typically the VNFM and VIM, to finish execution or to time out. After that, the NFVO shall put the operation occurrence into the FAILED_TEMP state. The NFVO shall not start any new VNF lifecycle management and resource management operation, shall cancel the ongoing VNF lifecycle management and resource management operations in the underlying system, typically the VNFM and VIM, and shall wait for the cancellation to finish or to time out. After that, the NFVO shall put the operation occurrence into the FAILED_TEMP state. | enum (GRACEFUL, FORCEFUL) |
| error <i>optional</i> | The definition of the general "ProblemDetails" data structure from IETF RFC 7807 [19] is reproduced in this structure. Compared to the general framework defined in IETF RFC 7807 [19], the "status" and "detail" attributes are mandated to be included by the present document, to ensure that the response contains additional textual information about an error. IETF RFC 7807 [19] foresees extensibility of the "ProblemDetails" type. It is possible that particular APIs in the present document, or particular implementations, define extensions to define additional attributes that provide more information about the error. The description column only provides some explanation of the meaning to Facilitate understanding of the design. For a full description, see IETF RFC 7807 [19]. | error |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| isAutomaticInvocation <i>required</i> | Set to true if this NS LCM operation occurrence has been automatically triggered by the NFVO. This occurs in the case of auto-scaling, auto-healing and when a nested NS is modified as a result of an operation on its composite NS. Set to false otherwise. | boolean |

| Name | Description | Schema |
|--|--|---|
| isCancelPending <i>required</i> | If the LCM operation occurrence is in "PROCESSING" or "ROLLING_BACK" state and the operation is being cancelled, this attribute shall be set to true. Otherwise, it shall be set to false. | boolean |
| lcmOperationType <i>required</i> | The enumeration NsLcmOpType represents those lifecycle operations that trigger a NS lifecycle management operation occurrence notification. Value Description —— ——— INSTANTIATE Represents the "Instantiate NS" LCM operation. SCALE Represents the "Scale NS" LCM operation. UPDATE Represents the "Update NS" LCM operation. TERMINATE Represents the "Terminate NS" LCM operation. HEAL Represents the "Heal NS" LCM operation. | enum (INSTANTIATE, SCALE, UPDATE, TERMINATE, HEAL) |
| nsInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| operationParams <i>optional</i> | Input parameters of the LCM operation. This attribute shall be formatted according to the request data type of the related LCM operation. The following mapping between lcmOperationType and the data type of this attribute shall apply: - INSTANTIATE: InstantiateNsRequest - SCALE: ScaleNsRequest - UPDATE: UpdateNsRequest - HEAL: HealNsRequest - TERMINATE: TerminateNsRequest This attribute shall be present if this data type is returned in a response to reading an individual resource, and may be present according to the chosen attribute selector parameter if this data type is returned in a response to a query of a container resource. | enum (INSTANTIATE, SCALE, UPDATE, HEAL, TERMINATE) |

| Name | Description | Schema |
|---|--|--|
| operationState <i>required</i> | The enumeration NsLcmOperationStateType shall comply with the provisions defined in Table 6.5.4.4-1. Value Description — —— PROCESSING The LCM operation is currently in execution. COMPLETED The LCM operation has been completed successfully. PARTIALLY_COMPLETED The LCM operation has been partially completed with acceptable errors. FAILED_TEMP The LCM operation has failed and execution has stopped, but the execution of the operation is not considered to be closed. FAILED The LCM operation has failed and it cannot be retried or rolled back, as it is determined that such action won't succeed. ROLLING_BACK The LCM operation is currently being rolled back. ROLLED_BACK The LCM operation has been successfully rolled back, i.e. The state of the VNF prior to the original operation invocation has been restored as closely as possible. | enum (PROCESSING, COMPLETED, FAILED_TEMP, FAILED, ROLLING_BACK, ROLLED_BACK) |
| resourceChanges <i>optional</i> | This attribute contains information about the cumulative changes to virtualised resources that were performed so far by the LCM operation since its start, if applicable | resourceChanges |
| startTime <i>required</i> | Date-time of the start of the operation. | string (date-time) |
| statusEnteredTime <i>optional</i> | Date-time when the current state was entered. | string (date-time) |

links

| Name | Description | Schema |
|--------------------------------------|--|----------------------------|
| cancel <i>optional</i> | This type represents a link to a resource. | cancel |
| continue <i>optional</i> | This type represents a link to a resource. | continue |
| fail <i>optional</i> | This type represents a link to a resource. | fail |
| nsInstance <i>required</i> | This type represents a link to a resource. | nsInstance |

| Name | Description | Schema |
|------------------------------------|--|--------------------------|
| retry <i>optional</i> | This type represents a link to a resource. | retry |
| rollback <i>optional</i> | This type represents a link to a resource. | rollback |
| self <i>required</i> | This type represents a link to a resource. | self |

cancel

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

continue

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

fail

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

nsInstance

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

retry

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

rollback

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

error

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

resourceChanges

| Name | Description | Schema |
|--|---|--|
| affectedNss <i>optional</i> | Information about the nested NS instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. See note. | < affectedNss > array |
| affectedPnfs <i>optional</i> | Information about the PNF instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. | < affectedPnfs > array |
| affectedSaps <i>optional</i> | Information about the nested NS instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. See note. | < affectedSaps > array |
| affectedVls <i>optional</i> | Information about the VL instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. | < affectedVls > array |

| Name | Description | Schema |
|--|--|---|
| affectedVnffgs <i>optional</i> | Information about the VNFFG instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. See note | < affectedVnffgs > array |
| affectedVnfs <i>optional</i> | Information about the VNF instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. | < affectedVnfs > array |

affectedNss

| Name | Description | Schema |
|--|---|---|
| changeResult <i>required</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED - PARTIALLY_COMPLETED | enum (COMPLETED, ROLLED_BACK, FAILED, PARTIALLY_COMPLETED) |
| changeType <i>required</i> | Signals the type of lifecycle change. Permitted values: - ADD - REMOVE - INSTANTIATE - SCALE - UPDATE - HEAL - TERMINATE | enum (ADD, REMOVE, INSTANTIATE, SCALE, UPDATE, HEAL, TERMINATE) |
| nsInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsdId <i>required</i> | An identifier with the intention of being globally unique. | string |

affectedPnfs

| Name | Description | Schema |
|--|---|---------------------------------------|
| changeResult <i>optional</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |
| changeType <i>optional</i> | Signals the type of change. Permitted values: - ADD - REMOVE - MODIFY | enum (ADD, REMOVE, MODIFY) |
| cpInstanceId <i>required</i> | Identifier of the CP in the scope of the PNF. | < string > array |

| Name | Description | Schema |
|--|--|--------|
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfName <i>optional</i> | Name of the PNF. | string |
| pnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| pnfdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

affectedSaps

| Name | Description | Schema |
|---|---|---------------------------------------|
| changeResult <i>optional</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |
| changeType <i>optional</i> | Signals the type of lifecycle change. Permitted values: - ADD - REMOVE - MODIFY | enum (ADD, REMOVE, MODIFY) |
| sapInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| sapName <i>optional</i> | Human readable name for the SAP. | string |
| sapdId <i>required</i> | An identifier with the intention of being globally unique. | string |

affectedVls

| Name | Description | Schema |
|--|---|---------------------------------------|
| changeResult <i>required</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |

| Name | Description | Schema |
|---|--|---|
| changeType <i>required</i> | Signals the type of change. Permitted values: - ADD - DELETE - MODIFY - ADD_LINK_PORT - REMOVE_LINK_PORT | enum (ADD, DELETE, MODIFY, ADD_LINK_PORT, REMOVE_LINK_PORT) |
| nsVirtualLinkDescId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsVirtualLinkInstanceId <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| vlProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

affectedVnffgs

| Name | Description | Schema |
|---|---|---------------------------------------|
| changeResult <i>optional</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |
| changeType <i>optional</i> | Signals the type of change. Permitted values: - ADD - DELETE - MODIFY | enum (ADD, DELETE, MODIFY) |
| vnffgInstanceId <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| vnffgdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

affectedVnfs

| Name | Description | Schema |
|--|---|---------------------------------------|
| changeResult <i>optional</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |

| Name | Description | Schema |
|---|---|--|
| changeType <i>optional</i> | Signals the type of change Permitted values: - ADD - REMOVE - INSTANTIATE - TERMINATE - SCALE - CHANGE_FLAVOUR - HEAL - OPERATE - MODIFY_INFORMATION - CHANGE_EXTERNAL_VNF_CONNECTIVITY | enum (ADD, REMOVE, INSTANTIATE, TERMINATE, SCALE, CHANGE_FLAVOUR, HEAL, OPERATE, MODIFY_INFORMATION, CHANGE_EXTERNAL_VNF_CONNECTIVITY) |
| changedInfo <i>optional</i> | Information about the changed VNF instance information, including VNF configurable properties,if applicable. When the "changedInfo" attribute is present, either the "changedVnfInfo" attribute or the "changedExtConnectivity" attribute or both shall be present. | changedInfo |
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfName <i>optional</i> | Name of the VNF Instance. | string |
| vnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| vnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |

changedInfo

| Name | Description | Schema |
|--|-------------|--|
| changedExtConnectivity <i>optional</i> | | changedExtConnectivity |

| Name | Description | Schema |
|--|--|--------------------------------|
| changedVnfInfo <i>optional</i> | This type represents the information that is requested to be modified for a VNF instance. The information to be modified shall comply with the associated NSD. EXAMPLE. The vnfPkgId attribute value for a particular VNF instance can only be updated with a value that matches the identifier value of a VNF package whose vnfdId is present in the associated profile of the NSD. | changedVnfInfo |

changedExtConnectivity

| Name | Description | Schema |
|--|---|---|
| extLinkPorts <i>optional</i> | Link ports of this VL. | < extLinkPorts > array |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

changedVnfInfo

| Name | Description | Schema |
|---|---|--------|
| Extensions <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| Metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfConfigurableProperties <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfInstanceDescription <i>optional</i> | New value of the "vnfInstanceDescription" attribute in "VnfInstance", or "null" to remove the attribute. | string |
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfInstanceName <i>optional</i> | New value of the "vnfInstanceName" attribute in "VnfInstance", or "null" to remove the attribute. | string |
| vnfPkgId <i>optional</i> | An identifier with the intention of being globally unique. | string |

Response 400

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Read an individual NS LCM operation occurrence resource.

```
GET /ns_lcm_op_occs/{nsLcmOpOccId}
```

Description

The client can use this method to retrieve status information about a NS lifecycle management operation occurrence by reading an individual "NS LCM operation occurrence" resource. This method shall follow the provisions specified in the Tables 6.4.10.3.2-1 and 6.4.10.3.2-2 for URI query parameters, request and response data structures, and response codes.

Parameters

| Type | Name | Description | Schema |
|---------------|---|--|--------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235 | string |
| Header | Content-Type <i>required</i> | The MIME type of the body of the request. Reference: IETF RFC 7231 | string |

| Type | Name | Description | Schema |
|--------|--|--|--------|
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | nsLcmOpOccId <i>required</i> | Identifier of a NS lifecycle management operation occurrence. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 200 | <p>200 OK Information about a NS LCM operation occurrence was queried successfully. The response body shall contain status information about a NS lifecycle management operation occurrence (see clause 6.5.2.3).</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response. This header field shall be present if the response has a non-empty message body.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 200 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be properly specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 416 | <p>416 RANGE NOT SATISFIABLE</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 416 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 200

| Name | Description | Schema |
|--------------------------------------|--|---------------------------|
| _links <i>required</i> | Links to resources related to this resource. | _links |
| cancelMode <i>optional</i> | Cancellation mode. The NFVO shall not start any new VNF lifecycle management and resource management operation, and shall wait for the ongoing VNF lifecycle management and resource management operations in the underlying system, typically the VNFM and VIM, to finish execution or to time out. After that, the NFVO shall put the operation occurrence into the FAILED_TEMP state. The NFVO shall not start any new VNF lifecycle management and resource management operation, shall cancel the ongoing VNF lifecycle management and resource management operations in the underlying system, typically the VNFM and VIM, and shall wait for the cancellation to finish or to time out. After that, the NFVO shall put the operation occurrence into the FAILED_TEMP state. | enum (GRACEFUL, FORCEFUL) |

| Name | Description | Schema |
|---|--|---|
| error <i>optional</i> | The definition of the general "ProblemDetails" data structure from IETF RFC 7807 [19] is reproduced in this structure. Compared to the general framework defined in IETF RFC 7807 [19], the "status" and "detail" attributes are mandated to be included by the present document, to ensure that the response contains additional textual information about an error. IETF RFC 7807 [19] foresees extensibility of the "ProblemDetails" type. It is possible that particular APIs in the present document, or particular implementations, define extensions to define additional attributes that provide more information about the error. The description column only provides some explanation of the meaning to Facilitate understanding of the design. For a full description, see IETF RFC 7807 [19]. | error |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| isAutomaticInvocation <i>required</i> | Set to true if this NS LCM operation occurrence has been automatically triggered by the NFVO. This occurs in the case of auto-scaling, auto-healing and when a nested NS is modified as a result of an operation on its composite NS. Set to false otherwise. | boolean |
| isCancelPending <i>required</i> | If the LCM operation occurrence is in "PROCESSING" or "ROLLING_BACK" state and the operation is being cancelled, this attribute shall be set to true. Otherwise, it shall be set to false. | boolean |
| lcmOperationType <i>required</i> | The enumeration NsLcmOpType represents those lifecycle operations that trigger a NS lifecycle management operation occurrence notification. Value Description —— ——— INSTANTIATE Represents the "Instantiate NS" LCM operation. SCALE Represents the "Scale NS" LCM operation. UPDATE Represents the "Update NS" LCM operation. TERMINATE Represents the "Terminate NS" LCM operation. HEAL Represents the "Heal NS" LCM operation. | enum (INSTANTIATE, SCALE, UPDATE, TERMINATE, HEAL) |
| nsInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|---|--|--|
| operationParameters <i>optional</i> | Input parameters of the LCM operation. This attribute shall be formatted according to the request data type of the related LCM operation. The following mapping between lcmOperationType and the data type of this attribute shall apply: - INSTANTIATE: InstantiateNsRequest - SCALE: ScaleNsRequest - UPDATE: UpdateNsRequest - HEAL: HealNsRequest - TERMINATE: TerminateNsRequest This attribute shall be present if this data type is returned in a response to reading an individual resource, and may be present according to the chosen attribute selector parameter if this data type is returned in a response to a query of a container resource. | enum (INSTANTIATE, SCALE, UPDATE, HEAL, TERMINATE) |
| operationState <i>required</i> | The enumeration NsLcmOperationStateType shall comply with the provisions defined in Table 6.5.4.4-1. Value Description — —— PROCESSING The LCM operation is currently in execution. COMPLETED The LCM operation has been completed successfully. PARTIALLY_COMPLETED The LCM operation has been partially completed with acceptable errors. FAILED_TEMP The LCM operation has failed and execution has stopped, but the execution of the operation is not considered to be closed. FAILED The LCM operation has failed and it cannot be retried or rolled back, as it is determined that such action won't succeed. ROLLING_BACK The LCM operation is currently being rolled back. ROLLED_BACK The LCM operation has been successfully rolled back, i.e. The state of the VNF prior to the original operation invocation has been restored as closely as possible. | enum (PROCESSING, COMPLETED, FAILED_TEMP, FAILED, ROLLING_BACK, ROLLED_BACK) |
| resourceChanges <i>optional</i> | This attribute contains information about the cumulative changes to virtualised resources that were performed so far by the LCM operation since its start, if applicable | resourceChanges |
| startTime <i>required</i> | Date-time of the start of the operation. | string (date-time) |
| statusEnteredTime <i>optional</i> | Date-time when the current state was entered. | string (date-time) |

links

| Name | Description | Schema |
|--------------------------------------|--|----------------------------|
| cancel <i>optional</i> | This type represents a link to a resource. | cancel |
| continue <i>optional</i> | This type represents a link to a resource. | continue |
| fail <i>optional</i> | This type represents a link to a resource. | fail |
| nsInstance <i>required</i> | This type represents a link to a resource. | nsInstance |
| retry <i>optional</i> | This type represents a link to a resource. | retry |
| rollback <i>optional</i> | This type represents a link to a resource. | rollback |
| self <i>required</i> | This type represents a link to a resource. | self |

cancel

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

continue

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

fail

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

nsInstance

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

retry

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

rollback

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

error

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

resourceChanges

| Name | Description | Schema |
|--|---|--|
| affectedNss <i>optional</i> | Information about the nested NS instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. See note. | < affectedNss > array |
| affectedPnfs <i>optional</i> | Information about the PNF instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. | < affectedPnfs > array |
| affectedSaps <i>optional</i> | Information about the nested NS instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. See note. | < affectedSaps > array |

| Name | Description | Schema |
|--|--|---------------------------------|
| affectedVls <i>optional</i> | Information about the VL instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. | < affectedVls > array |
| affectedVnffgs <i>optional</i> | Information about the VNFFG instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. See note | < affectedVnffgs > array |
| affectedVnfs <i>optional</i> | Information about the VNF instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. | < affectedVnfs > array |

affectedNss

| Name | Description | Schema |
|--|---|---|
| changeResult <i>required</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED - PARTIALLY_COMPLETED | enum (COMPLETED, ROLLED_BACK, FAILED, PARTIALLY_COMPLETED) |
| changeType <i>required</i> | Signals the type of lifecycle change. Permitted values: - ADD - REMOVE - INSTITUTE - SCALE - UPDATE - HEAL - TERMINATE | enum (ADD, REMOVE, INSTITUTE, SCALE, UPDATE, HEAL, TERMINATE) |
| nsInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsdId <i>required</i> | An identifier with the intention of being globally unique. | string |

affectedPnfs

| Name | Description | Schema |
|--|---|---------------------------------------|
| changeResult <i>optional</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |
| changeType <i>optional</i> | Signals the type of change. Permitted values: - ADD - REMOVE - MODIFY | enum (ADD, REMOVE, MODIFY) |

| Name | Description | Schema |
|--|--|------------------|
| cpInstanceId <i>required</i> | Identifier of the CP in the scope of the PNF. | < string > array |
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfName <i>optional</i> | Name of the PNF. | string |
| pnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| pnfdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

affectedSaps

| Name | Description | Schema |
|---|---|---------------------------------------|
| changeResult <i>optional</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |
| changeType <i>optional</i> | Signals the type of lifecycle change. Permitted values: - ADD - REMOVE - MODIFY | enum (ADD, REMOVE, MODIFY) |
| sapInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| sapName <i>optional</i> | Human readable name for the SAP. | string |
| sapdId <i>required</i> | An identifier with the intention of being globally unique. | string |

affectedVls

| Name | Description | Schema |
|--|---|---------------------------------------|
| changeResult <i>required</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |

| Name | Description | Schema |
|---|--|---|
| changeType <i>required</i> | Signals the type of change. Permitted values: - ADD - DELETE - MODIFY - ADD_LINK_PORT - REMOVE_LINK_PORT | enum (ADD, DELETE, MODIFY, ADD_LINK_PORT, REMOVE_LINK_PORT) |
| nsVirtualLinkDescId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsVirtualLinkInstanceId <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| vlProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

affectedVnffgs

| Name | Description | Schema |
|---|---|---------------------------------------|
| changeResult <i>optional</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |
| changeType <i>optional</i> | Signals the type of change. Permitted values: - ADD - DELETE - MODIFY | enum (ADD, DELETE, MODIFY) |
| vnffgInstanceId <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| vnffgdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

affectedVnfs

| Name | Description | Schema |
|--|---|---------------------------------------|
| changeResult <i>optional</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |

| Name | Description | Schema |
|---|---|--|
| changeType <i>optional</i> | Signals the type of change Permitted values: - ADD - REMOVE - INSTANTIATE - TERMINATE - SCALE - CHANGE_FLAVOUR - HEAL - OPERATE - MODIFY_INFORMATION - CHANGE_EXTERNAL_VNF_CONNECTIVITY | enum (ADD, REMOVE, INSTANTIATE, TERMINATE, SCALE, CHANGE_FLAVOUR, HEAL, OPERATE, MODIFY_INFORMATION, CHANGE_EXTERNAL_VNF_CONNECTIVITY) |
| changedInfo <i>optional</i> | Information about the changed VNF instance information, including VNF configurable properties,if applicable. When the "changedInfo" attribute is present, either the "changedVnfInfo" attribute or the "changedExtConnectivity" attribute or both shall be present. | changedInfo |
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfName <i>optional</i> | Name of the VNF Instance. | string |
| vnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| vnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |

changedInfo

| Name | Description | Schema |
|--|-------------|--|
| changedExtConnectivity <i>optional</i> | | changedExtConnectivity |

| Name | Description | Schema |
|--|--|--------------------------------|
| changedVnfInfo <i>optional</i> | This type represents the information that is requested to be modified for a VNF instance. The information to be modified shall comply with the associated NSD. EXAMPLE. The vnfPkgId attribute value for a particular VNF instance can only be updated with a value that matches the identifier value of a VNF package whose vnfdId is present in the associated profile of the NSD. | changedVnfInfo |

changedExtConnectivity

| Name | Description | Schema |
|--|---|---|
| extLinkPorts <i>optional</i> | Link ports of this VL. | < extLinkPorts > array |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

changedVnfInfo

| Name | Description | Schema |
|---|---|--------|
| Extensions <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| Metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfConfigurableProperties <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfInstanceDescription <i>optional</i> | New value of the "vnfInstanceDescription" attribute in "VnfInstance", or "null" to remove the attribute. | string |
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfInstanceName <i>optional</i> | New value of the "vnfInstanceName" attribute in "VnfInstance", or "null" to remove the attribute. | string |
| vnfPkgId <i>optional</i> | An identifier with the intention of being globally unique. | string |

Response 400

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 416

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Continue a NS lifecycle management operation occurrence.

```
POST /ns_lcm_op_occs/{nsLcmOpOccId}/continue
```

Description

The POST method initiates continuing an NS lifecycle operation if that operation has experienced a temporary failure, i.e. the related "NS LCM operation occurrence" is in "FAILED_TEMP" state. This method shall follow the provisions specified in the Tables 6.4.13.3.1-1 and 6.4.13.3.1-2 for URI query parameters, request and response data structures, and response codes.

Parameters

| Type | Name | Description | Schema |
|---------------|---|---|--------|
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235 | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | nsLcmOpOccId <i>required</i> | Identifier of a NS lifecycle management operation occurrence to be continued. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|--|------------|
| 202 | <p>202 ACCEPTED The request was accepted for processing, but the processing has not been completed. On success, the HTTP response shall include a "Location" HTTP header that contains the URI of the newly-created "NS Descriptor operation occurrence" resource corresponding to the operation. The response body shall be empty.</p> <p>Headers :</p> <p>Location (string (url)) : The resource URI of the created NS instance.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | No Content |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|--------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 400

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Retry a NS lifecycle management operation occurrence.

```
POST /ns_lcm_op_occs/{nsLcmOpOccId}/retry
```

Description

The POST method initiates retrying a NS lifecycle management operation if that operation has experienced a temporary failure, i.e. the related "NS LCM operation occurrence" is in "FAILED_TEMP" state. This method shall follow the provisions specified in the Tables 6.4.11.3.1-1 and 6.4.11.3.1-2 for URI query parameters, request and response data structures, and response codes.

Parameters

| Type | Name | Description | Schema |
|--------|---|--|--------|
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235 | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | nsLcmOpOccId <i>required</i> | Identifier of a NS lifecycle management operation occurrence to be retried. This identifier can be retrieved from the resource referenced by the "Location" HTTP header in the response to a POST request triggering a NS LCM operation. It can also be retrieved from the "nsLcmOpOccId" attribute in the NsLcmOperationOccurrenceNotification. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|--|------------|
| 202 | <p>202 ACCEPTED The request was accepted for processing, but the processing has not been completed. On success, the HTTP response shall include a "Location" HTTP header that contains the URI of the newly-created "NS Descriptor operation occurrence" resource corresponding to the operation. The response body shall be empty.</p> <p>Headers :</p> <p>Location (string (url)) : The resource URI of the created NS instance.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | No Content |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|--------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 400

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Rollback a NS lifecycle management operation occurrence.

```
POST /ns_lcm_op_occs/{nsLcmOpOccId}/rollback
```

Description

The POST method initiates rolling back a NS lifecycle operation if that operation has experienced a temporary failure, i.e. the related "NS LCM operation occurrence" is in "FAILED_TEMP" state. This method shall follow the provisions specified in the Tables 6.4.12.3.1-1 and 6.4.12.3.1-2 for URI query parameters, request and response data structures, and response codes.

Parameters

| Type | Name | Description | Schema |
|---------------|---|--|--------|
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235 | string |

| Type | Name | Description | Schema |
|--------|--|--|--------|
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | nsLcmOpOccId <i>required</i> | Identifier of a NS lifecycle management operation occurrence to be rolled back. This identifier can be retrieved from the resource referenced by the "Location" HTTP header in the response to a POST request triggering a NS LCM operation. It can also be retrieved from the "nsLcmOpOccId" attribute in the NsLcmOperationOccurrenceNotification. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|--|------------|
| 202 | <p>202 ACCEPTED The request was accepted for processing, but the processing has not been completed. On success, the HTTP response shall include a "Location" HTTP header that contains the URI of the newly-created "NS Descriptor operation occurrence" resource corresponding to the operation. The response body shall be empty.</p> <p>Headers :</p> <p>Location (string (url)) : The resource URI of the created NS instance.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | No Content |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|--------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 400

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Cancel a NS lifecycle management operation occurrence.

```
POST /nslcm/v1/ns_lcm_op_occs/{nsLcmOpOccId}/cancel
```

Description

The POST method initiates canceling an ongoing NS lifecycle management operation while it is being executed or rolled back, i.e. the related "NS LCM operation occurrence" is either in "PROCESSING" or "ROLLING_BACK" state. This method shall follow the provisions specified in the Tables 6.4.15.3.1-1 and 6.4.15.3.1-2 for URI query parameters, request and response data structures, and response codes.

Parameters

| Type | Name | Description | Schema |
|--------|---|---|--------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235 | string |
| Header | Content-Type <i>required</i> | The MIME type of the body of the request. Reference: IETF RFC 7231 | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | nsLcmOpOccId <i>required</i> | Identifier of a NS lifecycle management operation occurrence to be canceled. This identifier can be retrieved from the resource referenced by the "Location" HTTP header in the response to a POST request triggering a NS LCM operation. It can also be retrieved from the "nsLcmOpOccId" attribute in the NsLcmOperationOccurrenceNotification. | string |
| Body | body <i>required</i> | The POST request to this resource shall include a CancelMode structure in the payload body to choose between "graceful" and "forceful" cancellation. | body |

body

| Name | Description | Schema |
|--------------------------------------|--|---------------------------|
| cancelMode <i>required</i> | Cancellation mode. The NFVO shall not start any new VNF lifecycle management and resource management operation, and shall wait for the ongoing VNF lifecycle management and resource management operations in the underlying system, typically the VNFM and VIM, to finish execution or to time out. After that, the NFVO shall put the operation occurrence into the FAILED_TEMP state. The NFVO shall not start any new VNF lifecycle management and resource management operation, shall cancel the ongoing VNF lifecycle management and resource management operations in the underlying system, typically the VNFM and VIM, and shall wait for the cancellation to finish or to time out. After that, the NFVO shall put the operation occurrence into the FAILED_TEMP state. | enum (GRACEFUL, FORCEFUL) |

Responses

| HTTP Code | Description | Schema |
|-----------|--|------------|
| 202 | <p>202 ACCEPTED The request was accepted for processing, but the processing has not been completed. On success, the HTTP response shall include a "Location" HTTP header that contains the URI of the newly-created "NS Descriptor operation occurrence" resource corresponding to the operation. The response body shall be empty.</p> <p>Headers :</p> <p>Location (string (url)) : The resource URI of the created NS instance.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | No Content |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|--------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 400

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Mark a NS lifecycle management operation occurrence as failed.

```
POST /nslcm/v1/ns_lcm_op_occs/{nsLcmOpOccId}/fail
```

Description

The POST method marks a NS lifecycle management operation occurrence as "finally failed" if that operation occurrence is in "FAILED_TEMP" state.

Parameters

| Type | Name | Description | Schema |
|---------------|----------------------------------|--|--------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |

| Type | Name | Description | Schema |
|--------|---|---|--------|
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235 | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | nsLcmOpOccId <i>required</i> | Identifier of a NS lifecycle management operation occurrence to be marked as "failed". This identifier can be retrieved from the resource referenced by the "Location" HTTP header in the response to a POST request triggering a NS LCM operation. It can also be retrieved from the "nsLcmOpOccId" attribute in the NsLcmOperationOccurrenceNotification. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 200 | <p>200 OK The state of the NS lifecycle management operation occurrence was changed successfully. The response shall include a representation of the NS lifecycle management operation occurrence resource.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response. This header field shall be present if the response has a non-empty message body.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 200 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 409 | <p>409 CONFLICT</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 409 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 200

| Name | Description | Schema |
|----------------------------------|--|------------------------|
| _links <i>required</i> | Links to resources related to this resource. | _links |

| Name | Description | Schema |
|---|--|---------------------------|
| cancelMode <i>optional</i> | Cancellation mode. The NFVO shall not start any new VNF lifecycle management and resource management operation, and shall wait for the ongoing VNF lifecycle management and resource management operations in the underlying system, typically the VNFM and VIM, to finish execution or to time out. After that, the NFVO shall put the operation occurrence into the FAILED_TEMP state. The NFVO shall not start any new VNF lifecycle management and resource management operation, shall cancel the ongoing VNF lifecycle management and resource management operations in the underlying system, typically the VNFM and VIM, and shall wait for the cancellation to finish or to time out. After that, the NFVO shall put the operation occurrence into the FAILED_TEMP state. | enum (GRACEFUL, FORCEFUL) |
| error <i>optional</i> | The definition of the general "ProblemDetails" data structure from IETF RFC 7807 [19] is reproduced in this structure. Compared to the general framework defined in IETF RFC 7807 [19], the "status" and "detail" attributes are mandated to be included by the present document, to ensure that the response contains additional textual information about an error. IETF RFC 7807 [19] foresees extensibility of the "ProblemDetails" type. It is possible that particular APIs in the present document, or particular implementations, define extensions to define additional attributes that provide more information about the error. The description column only provides some explanation of the meaning to Facilitate understanding of the design. For a full description, see IETF RFC 7807 [19]. | error |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| isAutomaticInvocation <i>required</i> | Set to true if this NS LCM operation occurrence has been automatically triggered by the NFVO. This occurs in the case of auto-scaling, auto-healing and when a nested NS is modified as a result of an operation on its composite NS. Set to false otherwise. | boolean |
| isCancelPending <i>required</i> | If the LCM operation occurrence is in "PROCESSING" or "ROLLING_BACK" state and the operation is being cancelled, this attribute shall be set to true. Otherwise, it shall be set to false. | boolean |

| Name | Description | Schema |
|--|---|--|
| lcmOperationType <i>required</i> | The enumeration NsLcmOpType represents those lifecycle operations that trigger a NS lifecycle management operation occurrence notification. Value Description —— ——— INSTANTIATE Represents the "Instantiate NS" LCM operation. SCALE Represents the "Scale NS" LCM operation. UPDATE Represents the "Update NS" LCM operation. TERMINATE Represents the "Terminate NS" LCM operation. HEAL Represents the "Heal NS" LCM operation. | enum (INSTANTIATE, SCALE, UPDATE, TERMINATE, HEAL) |
| nsInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| operationParams <i>optional</i> | Input parameters of the LCM operation. This attribute shall be formatted according to the request data type of the related LCM operation. The following mapping between lcmOperationType and the data type of this attribute shall apply: - INSTANTIATE: InstantiateNsRequest - SCALE: ScaleNsRequest - UPDATE: UpdateNsRequest - HEAL: HealNsRequest - TERMINATE: TerminateNsRequest This attribute shall be present if this data type is returned in a response to reading an individual resource, and may be present according to the chosen attribute selector parameter if this data type is returned in a response to a query of a container resource. | enum (INSTANTIATE, SCALE, UPDATE, HEAL, TERMINATE) |
| operationState <i>required</i> | The enumeration NsLcmOperationStateType shall comply with the provisions defined in Table 6.5.4.4-1. Value Description —— ——— PROCESSING The LCM operation is currently in execution. COMPLETED The LCM operation has been completed successfully. PARTIALLY_COMPLETED The LCM operation has been partially completed with acceptable errors. FAILED_TEMP The LCM operation has failed and execution has stopped, but the execution of the operation is not considered to be closed. FAILED The LCM operation has failed and it cannot be retried or rolled back, as it is determined that such action won't succeed. ROLLING_BACK The LCM operation is currently being rolled back. ROLLED_BACK The LCM operation has been successfully rolled back, i.e. The state of the VNF prior to the original operation invocation has been restored as closely as possible. | enum (PROCESSING, COMPLETED, FAILED_TEMP, FAILED, ROLLING_BACK, ROLLED_BACK) |

| Name | Description | Schema |
|---|--|---------------------------------|
| resourceChanges <i>optional</i> | This attribute contains information about the cumulative changes to virtualised resources that were performed so far by the LCM operation since its start, if applicable | resourceChanges |
| startTime <i>required</i> | Date-time of the start of the operation. | string (date-time) |
| statusEnteredTime <i>optional</i> | Date-time when the current state was entered. | string (date-time) |

_links

| Name | Description | Schema |
|--------------------------------------|--|----------------------------|
| cancel <i>optional</i> | This type represents a link to a resource. | cancel |
| continue <i>optional</i> | This type represents a link to a resource. | continue |
| fail <i>optional</i> | This type represents a link to a resource. | fail |
| nsInstance <i>required</i> | This type represents a link to a resource. | nsInstance |
| retry <i>optional</i> | This type represents a link to a resource. | retry |
| rollback <i>optional</i> | This type represents a link to a resource. | rollback |
| self <i>required</i> | This type represents a link to a resource. | self |

cancel

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

continue

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

fail

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

nsInstance

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

retry

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

rollback

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

error

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

resourceChanges

| Name | Description | Schema |
|--|---|--|
| affectedNss <i>optional</i> | Information about the nested NS instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. See note. | < affectedNss > array |
| affectedPnfs <i>optional</i> | Information about the PNF instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. | < affectedPnfs > array |
| affectedSaps <i>optional</i> | Information about the nested NS instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. See note. | < affectedSaps > array |
| affectedVls <i>optional</i> | Information about the VL instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. | < affectedVls > array |
| affectedVnffgs <i>optional</i> | Information about the VNFFG instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. See note | < affectedVnffgs > array |
| affectedVnfs <i>optional</i> | Information about the VNF instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation. | < affectedVnfs > array |

affectedNss

| Name | Description | Schema |
|--|---|--|
| changeResult <i>required</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED - PARTIALLY_COMPLETED | enum (COMPLETED, ROLLED_BACK, FAILED, PARTIALLY_COMPLETED) |

| Name | Description | Schema |
|--|--|---|
| changeType <i>required</i> | Signals the type of lifecycle change. Permitted values: - ADD - REMOVE - INSTANTIATE - SCALE - UPDATE - HEAL - TERMINATE | enum (ADD, REMOVE, INSTANTIATE, SCALE, UPDATE, HEAL, TERMINATE) |
| nsInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| nsdId <i>required</i> | An identifier with the intention of being globally unique. | string |

affectedPnfs

| Name | Description | Schema |
|--|---|---------------------------------------|
| changeResult <i>optional</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |
| changeType <i>optional</i> | Signals the type of change. Permitted values: - ADD - REMOVE - MODIFY | enum (ADD, REMOVE, MODIFY) |
| cpInstanceId <i>required</i> | Identifier of the CP in the scope of the PNF. | < string > array |
| pnfId <i>required</i> | An identifier with the intention of being globally unique. | string |
| pnfName <i>optional</i> | Name of the PNF. | string |
| pnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| pnfdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

affectedSaps

| Name | Description | Schema |
|---|---|---------------------------------------|
| changeResult <i>optional</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |
| changeType <i>optional</i> | Signals the type of lifecycle change. Permitted values: - ADD - REMOVE - MODIFY | enum (ADD, REMOVE, MODIFY) |
| sapInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| sapName <i>optional</i> | Human readable name for the SAP. | string |
| sapdId <i>required</i> | An identifier with the intention of being globally unique. | string |

affectedVls

| Name | Description | Schema |
|---|---|---|
| changeResult <i>required</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |
| changeType <i>required</i> | Signals the type of change. Permitted values: - ADD - DELETE - MODIFY - ADD_LINK_PORT - REMOVE_LINK_PORT | enum (ADD, DELETE, MODIFY, ADD_LINK_PORT, REMOVE_LINK_PORT) |
| nsVirtualLinkDescId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| nsVirtualLinkInstanceId <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| vlProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

affectedVnffgs

| Name | Description | Schema |
|---|---|---------------------------------------|
| changeResult <i>optional</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |
| changeType <i>optional</i> | Signals the type of change. Permitted values: - ADD - DELETE - MODIFY | enum (ADD, DELETE, MODIFY) |
| vnffgInstanceId <i>required</i> | An identifier that is unique with respect to a NS. Representation: string of variable length. | string |
| vnffgdId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |

affectedVnfs

| Name | Description | Schema |
|---|---|--|
| changeResult <i>optional</i> | Signals the result of change identified by the "changeType" attribute. Permitted values: - COMPLETED - ROLLED_BACK - FAILED | enum (COMPLETED, ROLLED_BACK, FAILED) |
| changeType <i>optional</i> | Signals the type of change Permitted values: - ADD - REMOVE - INSTANTIATE - TERMINATE - SCALE - CHANGE_FLAVOUR - HEAL - OPERATE - MODIFY_INFORMATION - CHANGE_EXTERNAL_VNF_CONNECTIVITY | enum (ADD, REMOVE, INSTANTIATE, TERMINATE, SCALE, CHANGE_FLAVOUR, HEAL, OPERATE, MODIFY_INFORMATION, CHANGE_EXTERNAL_VNF_CONNECTIVITY) |
| changedInfo <i>optional</i> | Information about the changed VNF instance information, including VNF configurable properties,if applicable. When the "changedInfo" attribute is present, either the "changedVnfInfo" attribute or the "changedExtConnectivity" attribute or both shall be present. | changedInfo |
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vnfName <i>optional</i> | Name of the VNF Instance. | string |
| vnfProfileId <i>required</i> | An identifier that is unique within a NS descriptor. Representation: string of variable length. | string |
| vnfdId <i>required</i> | An identifier with the intention of being globally unique. | string |

changedInfo

| Name | Description | Schema |
|--|--|--|
| changedExtConnectivity <i>optional</i> | | changedExtConnectivity |
| changedVnfInfo <i>optional</i> | This type represents the information that is requested to be modified for a VNF instance. The information to be modified shall comply with the associated NSD. EXAMPLE. The vnfPkgId attribute value for a particular VNF instance can only be updated with a value that matches the identifier value of a VNF package whose vnfdId is present in the associated profile of the NSD. | changedVnfInfo |

changedExtConnectivity

| Name | Description | Schema |
|--|---|---|
| extLinkPorts <i>optional</i> | Link ports of this VL. | < extLinkPorts > array |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

extLinkPorts

| Name | Description | Schema |
|--|---|--------------------------------|
| cpInstanceId <i>optional</i> | An identifier that is unique for the respective type within a VNF instance, but may not be globally unique. | string |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |
| resourceHandle <i>required</i> | This type represents the information that allows addressing a virtualised resource that is used by a VNF instance or by an NS instance. Information about the resource is available from the VIM. | resourceHandle |

resourceHandle

| Name | Description | Schema |
|--|--|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

resourceHandle

| Name | Description | Schema |
|--|---|--------|
| resourceId <i>required</i> | An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance. Representation: string of variable length. | string |
| resourceProviderId <i>optional</i> | An identifier with the intention of being globally unique. | string |

| Name | Description | Schema |
|--|--|--------|
| vimId <i>optional</i> | An identifier with the intention of being globally unique. | string |
| vimLevelResourceType <i>optional</i> | Type of the resource in the scope of the VIM or the resource provider. The value set of the "vimLevelResourceType" attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. | string |

changedVnfInfo

| Name | Description | Schema |
|---|---|--------|
| Extensions <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| Metadata <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfConfigurableProperties <i>optional</i> | This type represents a list of key-value pairs. The order of the pairs in the list is not significant. In JSON, a set of key-value pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 7159. | object |
| vnfInstanceDescription <i>optional</i> | New value of the "vnfInstanceDescription" attribute in "VnfInstance", or "null" to remove the attribute. | string |
| vnfInstanceId <i>required</i> | An identifier with the intention of being globally unique. | string |
| vnfInstanceName <i>optional</i> | New value of the "vnfInstanceName" attribute in "VnfInstance", or "null" to remove the attribute. | string |
| vnfPkgId <i>optional</i> | An identifier with the intention of being globally unique. | string |

Response 400

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 409

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Subscribe to NS lifecycle change notifications.

POST /subscriptions

Description

The POST method creates a new subscription. This method shall support the URI query parameters, request and response data structures, and response codes, as specified in the Tables 6.4.16.3.1-1 and 6.4.16.3.1-2. Creation of two subscription resources with the same callbackURI and the same filter can result in performance degradation and will provide duplicates of notifications to the OSS, and might make sense only in very rare use cases. Consequently, the NFVO may either allow creating a subscription resource if another subscription resource with the same filter and callbackUri already exists (in which case it shall return the "201 Created" response code), or may decide to not create a duplicate subscription resource (in which case it shall return a "303 See Other" response code referencing the existing subscription resource with the same filter and callbackUri).

Parameters

| Type | Name | Description | Schema |
|--------|---|--|----------------------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235. | string |
| Header | Content-Type <i>required</i> | The MIME type of the body of the request. Reference: IETF RFC 7231 | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Body | body <i>required</i> | Details of the subscription to be created, as defined in clause 6.5.2.2. | body |

body

| Name | Description | Schema |
|--|---|--------------------------------|
| authentication <i>optional</i> | | authentication |
| callbackUri <i>required</i> | String formatted according to IETF RFC 3986. | string (uri) |
| filter <i>optional</i> | This type represents a subscription filter related to notifications about NS lifecycle changes. It shall comply with the provisions defined in Table 6.5.3.8-1. At a particular nesting level in the filter structure, the following applies: All attributes shall match in order for the filter to match (logical "and" between different filter attributes). If an attribute is an array, the attribute shall match if at least one of the values in the array matches (logical "or" between the values of one filter attribute). | filter |

authentication

| Name | Description | Schema |
|---|--|---|
| authType <i>required</i> | Defines the types of Authentication / Authorization which the API consumer is willing to accept when receiving a notification. Permitted values: - BASIC: In every HTTP request to the notification endpoint, use HTTP Basic authentication with the client credentials. - OAUTH2_CLIENT_CREDENTIALS: In every HTTP request to the notification endpoint, use an OAuth 2.0 Bearer token, obtained using the client credentials grant type. - TLS_CERT: Every HTTP request to the notification endpoint is sent over a mutually authenticated TLS session, i.e. not only the server is authenticated, but also the client is authenticated during the TLS tunnel setup. | < enum (BASIC, OAUTH2_CLIENT_CREDENTIALS, TLS_CERT) > array |
| paramsBasic <i>optional</i> | Parameters for authentication/authorization using BASIC. Shall be present if authType is "BASIC" and the contained information has not been provisioned out of band. Shall be absent otherwise. | paramsBasic |
| paramsOAuth2ClientCredentials <i>optional</i> | Parameters for authentication/authorization using OAUTH2_CLIENT_CREDENTIALS. Shall be present if authType is "OAUTH2_CLIENT_CREDENTIALS" and the contained information has not been provisioned out of band. Shall be absent otherwise. | paramsOAuth2ClientCredentials |

paramsBasic

| Name | Description | Schema |
|------------------------------------|--|--------|
| password <i>optional</i> | Password to be used in HTTP Basic authentication. Shall be present if it has not been provisioned out of band. | string |
| userName <i>optional</i> | Username to be used in HTTP Basic authentication. Shall be present if it has not been provisioned out of band. | string |

paramsOAuth2ClientCredentials

| Name | Description | Schema |
|--|---|--------------|
| clientId <i>optional</i> | Client identifier to be used in the access token request of the OAuth 2.0 client credentials grant type. Shall be present if it has not been provisioned out of band. The clientId and clientPassword passed in a subscription shall not be the same as the clientId and clientPassword that are used to obtain authorization for API requests. Client credentials may differ between subscriptions. The value of clientPassword should be generated by a random process. | string |
| clientPassword <i>optional</i> | Client password to be used in the access token request of the OAuth 2.0 client credentials grant type. Shall be present if it has not been provisioned out of band. The clientId and clientPassword passed in a subscription shall not be the same as the clientId and clientPassword that are used to obtain authorization for API requests. Client credentials may differ between subscriptions. The value of clientPassword should be generated by a random process. | string |
| tokenEndpoint <i>optional</i> | String formatted according to IETF RFC 3986. | string (uri) |

filter

| Name | Description | Schema |
|---|---|---|
| lcmOpNameImpactingNsComponent <i>optional</i> | Match particular LCM operation names for the notification of type NsChangeNotification. May be present if the "notificationTypes" attribute contains the value "NsChangeNotification", and shall be absent otherwise. | < enum (VNF_INSTANTIATE, VNF_SCALE, VNF_SCALE_TO_LEVEL, VNF_CHANGE_FLAVOUR, VNF_TERMINATE, VNF_HEAL, VNF_OPERATE, VNF_CHANGE_EXT_CONN, VNF_MODIFY_INFO, NS_INSTANTIATE, NS_SCALE, NS_UPDATE, NS_TERMINATE, NS_HEAL) > array |

| Name | Description | Schema |
|--|--|--|
| lcmOpOccStatusImpactingNsComponent <i>optional</i> | Match particular LCM operation status values as reported in notifications of type NsChangeNotification. May be present if the "notificationTypes" attribute contains the value "NsChangeNotification", and shall be absent otherwise. | < enum (START, COMPLETED, PARTIALLY_COMPLETED, FAILED, ROLLED_BACK) > array |
| notificationTypes <i>optional</i> | Match particular notification types. Permitted values: - NsLcmOperationOccurrenceNotification - NsIdentifierCreationNotification - NsIdentifierDeletionNotification - NsChangeNotification | < enum (NsLcmOperationOccurrenceNotification, NsIdentifierCreationNotification, NsIdentifierDeletionNotification, NsChangeNotification) > array |
| nsComponentTypes <i>optional</i> | Match particular NS component types for the notification of type NsChangeNotification. May be present if the "notificationTypes" attribute contains the value "NsChang. | < enum (VNF, PNF, NS) > array |
| nsInstanceSubscriptionFilter <i>optional</i> | This type represents subscription filter criteria to match NS instances. | nsInstanceSubscriptionFilter |
| operationStates <i>optional</i> | Match particular LCM operation state values as reported in notifications of type NsLcmOperationOccurrenceNotification. May be present if the "notificationTypes" attribute contains the value "NsLcmOperationOccurrenceNotification", and shall be absent otherwise. | < enum (PROCESSING, COMPLETED, PARTIALLY_COMPLETED, FAILED_TEMP, FAILED, ROLLING_BACK, ROLLED_BACK) > array |
| operationTypes <i>optional</i> | Match particular NS lifecycle operation types for the notification of type NsLcmOperationOccurrenceNotification. May be present if the "notificationTypes" attribute contains the value "NsLcmOperationOccurrenceNotification", and shall be absent otherwise. | < enum (INSTANTIATE, SCALE, UPDATE, TERMINATE, HEAL) > array |

nsInstanceSubscriptionFilter

| Name | Description | Schema |
|---|--|------------------|
| nsInstanceIds <i>optional</i> | If present, match NS instances with an instance identifier listed in this attribute. | < string > array |
| nsInstanceNames <i>optional</i> | If present, match NS instances with a NS Instance Name listed in this attribute. | < string > array |
| nsdIds <i>optional</i> | If present, match NS instances that were created based on a NSD identified by one of the nsdId values listed in this attribute. | < string > array |
| pnfdIds <i>optional</i> | If present, match NS instances that contain PNFs that are represented by a PNFD identified by one of the pnfdId values listed in this attribute. | < string > array |
| vnfdIds <i>optional</i> | If present, match NS instances that contain VNF instances that were created based on a VNFD identified by one of the vnfdId values listed in this attribute. | < string > array |

Responses

| HTTP Code | Description | Schema |
|------------|--|------------------------------|
| 201 | <p>201 Created The subscription was created successfully. The response body shall contain a representation of the created subscription resource. The HTTP response shall include a "Location:" HTTP header that points to the created subscription resource.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response. This header field shall be present if the response has a non-empty message body.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 201 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 303 | <p>303 SEE OTHER</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | No Content |
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|--------------|
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 201

| Name | Description | Schema |
|---------------------------------------|--|------------------------|
| _links <i>required</i> | Links to resources related to this resource. | _links |
| callbackUri <i>required</i> | String formatted according to IETF RFC 3986. | string (uri) |

| Name | Description | Schema |
|----------------------------------|---|------------------------|
| filter <i>optional</i> | This type represents a subscription filter related to notifications about NS lifecycle changes. It shall comply with the provisions defined in Table 6.5.3.8-1. At a particular nesting level in the filter structure, the following applies: All attributes shall match in order for the filter to match (logical "and" between different filter attributes). If an attribute is an array, the attribute shall match if at least one of the values in the array matches (logical "or" between the values of one filter attribute). | filter |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |

links

| Name | Description | Schema |
|--------------------------------|--|----------------------|
| self <i>required</i> | This type represents a link to a resource. | self |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

filter

| Name | Description | Schema |
|--|---|---|
| lcmOpNameImpactingNsComponent <i>optional</i> | Match particular LCM operation names for the notification of type NsChangeNotification. May be present if the "notificationTypes" attribute contains the value "NsChangeNotification", and shall be absent otherwise. | < enum (VNF_INSTANTIATE, VNF_SCALE, VNF_SCALE_TO_LEVEL, VNF_CHANGE_FLAVOUR, VNF_TERMINATE, VNF_HEAL, VNF_OPERATE, VNF_CHANGE_EXT_CONN, VNF_MODIFY_INFO, NS_INSTANTIATE, NS_SCALE, NS_UPDATE, NS_TERMINATE, NS_HEAL) > array |
| lcmOpOccStatusImpactingNsComponent <i>optional</i> | Match particular LCM operation status values as reported in notifications of type NsChangeNotification. May be present if the "notificationTypes" attribute contains the value "NsChangeNotification", and shall be absent otherwise. | < enum (START, COMPLETED, PARTIALLY_COMPLETED, FAILED, ROLLED_BACK) > array |
| notificationTypes <i>optional</i> | Match particular notification types. Permitted values: - NsLcmOperationOccurrenceNotification - NsIdentifierCreationNotification - NsIdentifierDeletionNotification - NsChangeNotification | < enum (NsLcmOperationOccurrenceNotification, NsIdentifierCreationNotification, NsIdentifierDeletionNotification, NsChangeNotification) > array |
| nsComponentTypes <i>optional</i> | Match particular NS component types for the notification of type NsChangeNotification. May be present if the "notificationTypes" attribute contains the value "NsChangeNotification". | < enum (VNF, PNF, NS) > array |
| nsInstanceSubscriptionFilter <i>optional</i> | This type represents subscription filter criteria to match NS instances. | nsInstanceSubscriptionFilter |

| Name | Description | Schema |
|---|--|---|
| operationStates <i>optional</i> | Match particular LCM operation state values as reported in notifications of type NsLcmOperationOccurrenceNotification. May be present if the "notificationTypes" attribute contains the value "NsLcmOperationOccurrenceNotification", and shall be absent otherwise. | < enum (PROCESSING, COMPLETED, PARTIALLY_COMPL ETED, FAILED_TEMP, FAILED, ROLLING_BACK, ROLLED_BACK) > array |
| operationTypes <i>optional</i> | Match particular NS lifecycle operation types for the notification of type NsLcmOperationOccurrenceNotification. May be present if the "notificationTypes" attribute contains the value "NsLcmOperationOccurrenceNotification", and shall be absent otherwise. | < enum (INSTANTIATE, SCALE, UPDATE, TERMINATE, HEAL) > array |

nsInstanceSubscriptionFilter

| Name | Description | Schema |
|---|--|------------------|
| nsInstanceIds <i>optional</i> | If present, match NS instances with an instance identifier listed in this attribute. | < string > array |
| nsInstanceNames <i>optional</i> | If present, match NS instances with a NS Instance Name listed in this attribute. | < string > array |
| nsdIds <i>optional</i> | If present, match NS instances that were created based on a NSD identified by one of the nsdId values listed in this attribute. | < string > array |
| pnfdIds <i>optional</i> | If present, match NS instances that contain PNFs that are represented by a PNFD identified by one of the pnfdId values listed in this attribute. | < string > array |
| vnfdIds <i>optional</i> | If present, match NS instances that contain VNF instances that were created based on a VNFD identified by one of the vnfdId values listed in this attribute. | < string > array |

Response 400

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Query multiple subscriptions.

```
GET /subscriptions
```


Description

Query Subscription Information. The GET method queries the list of active subscriptions of the functional block that invokes the method. It can be used e.g. for resynchronization after error situations.

Parameters

| Type | Name | Description | Schema |
|--------|--|---|--------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235. | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Query | filter <i>optional</i> | Attribute-based filtering expression according to clause 4.3.2. The NFVO shall support receiving this parameter as part of the URI query string. The OSS/BSS may supply this parameter. All attribute names that appear in the LccnSubscription and in data types referenced from it shall be supported by the NFVO in the filter expression. | string |
| Query | nextpage_opaque_marker <i>optional</i> | Marker to obtain the next page of a paged response. Shall be supported by the NFVO if the NFVO supports alternative 2 (paging) according to clause 4.7.2.1 for this resource. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|--|---|
| 200 | <p>200 OK The list of subscriptions was queried successfully. The response body shall contain the representations of all active subscriptions of the functional block that invokes the method. If the NFVO supports alternative 2 (paging) according to clause 4.7.2.1 for this resource, inclusion of the Link HTTP header in this response shall follow the provisions in clause 4.7.2.3.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response. This header field shall be present if the response has a non-empty message body.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> <p>Link (string) : Reference to other resources. Used for paging in the present document, see clause 4.7.2.1.</p> | < Response 200 > array |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|--------------|
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 200

| Name | Description | Schema |
|---------------------------------------|--|------------------------|
| _links <i>required</i> | Links to resources related to this resource. | _links |
| callbackUri <i>required</i> | String formatted according to IETF RFC 3986. | string (uri) |

| Name | Description | Schema |
|----------------------------------|---|------------------------|
| filter <i>optional</i> | This type represents a subscription filter related to notifications about NS lifecycle changes. It shall comply with the provisions defined in Table 6.5.3.8-1. At a particular nesting level in the filter structure, the following applies: All attributes shall match in order for the filter to match (logical "and" between different filter attributes). If an attribute is an array, the attribute shall match if at least one of the values in the array matches (logical "or" between the values of one filter attribute). | filter |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |

links

| Name | Description | Schema |
|--------------------------------|--|----------------------|
| self <i>required</i> | This type represents a link to a resource. | self |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

filter

| Name | Description | Schema |
|--|---|---|
| lcmOpNameImpactingNsComponent <i>optional</i> | Match particular LCM operation names for the notification of type NsChangeNotification. May be present if the "notificationTypes" attribute contains the value "NsChangeNotification", and shall be absent otherwise. | < enum (VNF_INSTANTIATE, VNF_SCALE, VNF_SCALE_TO_LEVEL, VNF_CHANGE_FLAVOUR, VNF_TERMINATE, VNF_HEAL, VNF_OPERATE, VNF_CHANGE_EXT_CONN, VNF_MODIFY_INFO, NS_INSTANTIATE, NS_SCALE, NS_UPDATE, NS_TERMINATE, NS_HEAL) > array |
| lcmOpOccStatusImpactingNsComponent <i>optional</i> | Match particular LCM operation status values as reported in notifications of type NsChangeNotification. May be present if the "notificationTypes" attribute contains the value "NsChangeNotification", and shall be absent otherwise. | < enum (START, COMPLETED, PARTIALLY_COMPLETED, FAILED, ROLLED_BACK) > array |
| notificationTypes <i>optional</i> | Match particular notification types. Permitted values: - NsLcmOperationOccurrenceNotification - NsIdentifierCreationNotification - NsIdentifierDeletionNotification - NsChangeNotification | < enum (NsLcmOperationOccurrenceNotification, NsIdentifierCreationNotification, NsIdentifierDeletionNotification, NsChangeNotification) > array |
| nsComponentTypes <i>optional</i> | Match particular NS component types for the notification of type NsChangeNotification. May be present if the "notificationTypes" attribute contains the value "NsChangeNotification". | < enum (VNF, PNF, NS) > array |
| nsInstanceSubscriptionFilter <i>optional</i> | This type represents subscription filter criteria to match NS instances. | nsInstanceSubscriptionFilter |

| Name | Description | Schema |
|---|--|---|
| operationStates <i>optional</i> | Match particular LCM operation state values as reported in notifications of type NsLcmOperationOccurrenceNotification. May be present if the "notificationTypes" attribute contains the value "NsLcmOperationOccurrenceNotification", and shall be absent otherwise. | < enum (PROCESSING, COMPLETED, PARTIALLY_COMPL ETED, FAILED_TEMP, FAILED, ROLLING_BACK, ROLLED_BACK) > array |
| operationTypes <i>optional</i> | Match particular NS lifecycle operation types for the notification of type NsLcmOperationOccurrenceNotification. May be present if the "notificationTypes" attribute contains the value "NsLcmOperationOccurrenceNotification", and shall be absent otherwise. | < enum (INSTANTIATE, SCALE, UPDATE, TERMINATE, HEAL) > array |

nsInstanceSubscriptionFilter

| Name | Description | Schema |
|---|--|------------------|
| nsInstanceIds <i>optional</i> | If present, match NS instances with an instance identifier listed in this attribute. | < string > array |
| nsInstanceNames <i>optional</i> | If present, match NS instances with a NS Instance Name listed in this attribute. | < string > array |
| nsdIds <i>optional</i> | If present, match NS instances that were created based on a NSD identified by one of the nsdId values listed in this attribute. | < string > array |
| pnfdIds <i>optional</i> | If present, match NS instances that contain PNFs that are represented by a PNFD identified by one of the pnfdId values listed in this attribute. | < string > array |
| vnfdIds <i>optional</i> | If present, match NS instances that contain VNF instances that were created based on a VNFD identified by one of the vnfdId values listed in this attribute. | < string > array |

Response 400

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Read an individual subscription resource.

```
GET /subscriptions/{subscriptionId}
```

Description

The GET method retrieves information about a subscription by reading an individual subscription resource. This method shall support the URI query parameters, request and response data structures, and response codes, as specified in the Tables 6.4.17.3.2-1 and 6.4.17.3.2-2

Parameters

| Type | Name | Description | Schema |
|--------|--|--|--------|
| Header | Accept <i>required</i> | Content-Types that are acceptable for the response. Reference: IETF RFC 7231 | string |
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235. | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | subscriptionId <i>required</i> | Identifier of this subscription. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 200 | <p>200 OK The operation has completed successfully. The response body shall contain a representation of the subscription resource.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response. This header field shall be present if the response has a non-empty message body.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 200 |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 404 | <p>404 NOT FOUND If the API producer did not find a current representation for the resource addressed by the URI passed in the request or is not willing to disclose that one exists, it shall respond with this response code. The "ProblemDetails" structure may be provided, including in the "detail" attribute information about the source of the problem, e.g. a wrong resource URI variable. This response code is not appropriate in case the resource addressed by the URI is a container resource which is designed to contain child resources, but does not contain any child resource at the time the request is received. For a GET request to an existing empty container resource, a typical response contains a 200 OK response code and a payload body with an empty array.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 404 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |

| HTTP Code | Description | Schema |
|-----------|--|--------------|
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 200

| Name | Description | Schema |
|---------------------------------------|--|------------------------|
| _links <i>required</i> | Links to resources related to this resource. | _links |
| callbackUri <i>required</i> | String formatted according to IETF RFC 3986. | string (uri) |

| Name | Description | Schema |
|----------------------------------|---|------------------------|
| filter <i>optional</i> | This type represents a subscription filter related to notifications about NS lifecycle changes. It shall comply with the provisions defined in Table 6.5.3.8-1. At a particular nesting level in the filter structure, the following applies: All attributes shall match in order for the filter to match (logical "and" between different filter attributes). If an attribute is an array, the attribute shall match if at least one of the values in the array matches (logical "or" between the values of one filter attribute). | filter |
| id <i>required</i> | An identifier with the intention of being globally unique. | string |

links

| Name | Description | Schema |
|--------------------------------|--|----------------------|
| self <i>required</i> | This type represents a link to a resource. | self |

self

| Name | Description | Schema |
|--------------------------------|--|--------------|
| href <i>required</i> | URI of a resource referenced from a notification. Should be an absolute URI (i.e. a URI that contains {apiRoot}), however, may be a relative URI (i.e. a URI where the {apiRoot} part is omitted) if the {apiRoot} information is not available. | string (url) |

filter

| Name | Description | Schema |
|--|---|---|
| lcmOpNameImpactingNsComponent <i>optional</i> | Match particular LCM operation names for the notification of type NsChangeNotification. May be present if the "notificationTypes" attribute contains the value "NsChangeNotification", and shall be absent otherwise. | < enum (VNF_INSTANTIATE, VNF_SCALE, VNF_SCALE_TO_LEVEL, VNF_CHANGE_FLAVOUR, VNF_TERMINATE, VNF_HEAL, VNF_OPERATE, VNF_CHANGE_EXT_CONN, VNF_MODIFY_INFO, NS_INSTANTIATE, NS_SCALE, NS_UPDATE, NS_TERMINATE, NS_HEAL) > array |
| lcmOpOccStatusImpactingNsComponent <i>optional</i> | Match particular LCM operation status values as reported in notifications of type NsChangeNotification. May be present if the "notificationTypes" attribute contains the value "NsChangeNotification", and shall be absent otherwise. | < enum (START, COMPLETED, PARTIALLY_COMPLETED, FAILED, ROLLED_BACK) > array |
| notificationTypes <i>optional</i> | Match particular notification types. Permitted values: - NsLcmOperationOccurrenceNotification - NsIdentifierCreationNotification - NsIdentifierDeletionNotification - NsChangeNotification | < enum (NsLcmOperationOccurrenceNotification, NsIdentifierCreationNotification, NsIdentifierDeletionNotification, NsChangeNotification) > array |
| nsComponentTypes <i>optional</i> | Match particular NS component types for the notification of type NsChangeNotification. May be present if the "notificationTypes" attribute contains the value "NsChangeNotification". | < enum (VNF, PNF, NS) > array |
| nsInstanceSubscriptionFilter <i>optional</i> | This type represents subscription filter criteria to match NS instances. | nsInstanceSubscriptionFilter |

| Name | Description | Schema |
|---|--|---|
| operationStates <i>optional</i> | Match particular LCM operation state values as reported in notifications of type NsLcmOperationOccurrenceNotification. May be present if the "notificationTypes" attribute contains the value "NsLcmOperationOccurrenceNotification", and shall be absent otherwise. | < enum (PROCESSING, COMPLETED, PARTIALLY_COMPLETED, FAILED_TEMP, FAILED, ROLLING_BACK, ROLLED_BACK) > array |
| operationTypes <i>optional</i> | Match particular NS lifecycle operation types for the notification of type NsLcmOperationOccurrenceNotification. May be present if the "notificationTypes" attribute contains the value "NsLcmOperationOccurrenceNotification", and shall be absent otherwise. | < enum (INSTANTIATE, SCALE, UPDATE, TERMINATE, HEAL) > array |

nsInstanceSubscriptionFilter

| Name | Description | Schema |
|---|--|------------------|
| nsInstanceIds <i>optional</i> | If present, match NS instances with an instance identifier listed in this attribute. | < string > array |
| nsInstanceNames <i>optional</i> | If present, match NS instances with a NS Instance Name listed in this attribute. | < string > array |
| nsdIds <i>optional</i> | If present, match NS instances that were created based on a NSD identified by one of the nsdId values listed in this attribute. | < string > array |
| pnfdIds <i>optional</i> | If present, match NS instances that contain PNFs that are represented by a PNFD identified by one of the pnfdId values listed in this attribute. | < string > array |
| vnfdIds <i>optional</i> | If present, match NS instances that contain VNF instances that were created based on a VNFD identified by one of the vnfdId values listed in this attribute. | < string > array |

Response 400

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 404

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Terminate a subscription.

```
DELETE /subscriptions/{subscriptionId}
```

Description

The DELETE method terminates an individual subscription. This method shall support the URI query parameters, request and response data structures, and response codes, as specified in the Tables 6.4.17.3.5-1 and 6.4.17.3.5-2.

Parameters

| Type | Name | Description | Schema |
|--------|--|---|--------|
| Header | Authorization <i>optional</i> | The authorization token for the request. Reference: IETF RFC 7235. | string |
| Header | Version <i>required</i> | Version of the API requested to use when responding to this request. | string |
| Path | subscriptionId <i>required</i> | Identifier of this subscription. | string |

Responses

| HTTP Code | Description | Schema |
|-----------|---|------------|
| 204 | <p>204 No Content The subscription resource was deleted successfully. The response body shall be empty.</p> <p>Headers :</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | No Content |

| HTTP Code | Description | Schema |
|-----------|---|--------------|
| 400 | <p>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the "ProblemDetails" structure to be returned. If the request is malformed or syntactically incorrect (e.g. if the request URI contains incorrect query parameters or the payload body contains a syntactically incorrect data structure), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If the response to a GET request which queries a container resource would be so big that the performance of the API producer is adversely affected, and the API producer does not support paging for the affected resource, it shall respond with this response code. The "ProblemDetails" structure shall be provided, and should include in the "detail" attribute more information about the source of the problem. If there is an application error related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem. If the request contains a malformed access token, the API producer should respond with this response. The details of the error shall be returned in the WWW Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided. The use of this HTTP error response code described above is applicable to the use of the OAuth 2.0 for the authorization of API requests and notifications, as defined in clauses 4.5.3.3 and 4.5.3.4.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 400 |

| HTTP Code | Description | Schema |
|-----------|---|------------------------------|
| 401 | <p>401 UNAUTHORIZED If the request contains no access token even though one is required, or if the request contains an authorization token that is invalid (e.g. expired or revoked), the API producer should respond with this response. The details of the error shall be returned in the WWW-Authenticate HTTP header, as defined in IETF RFC 6750 and IETF RFC 7235. The ProblemDetails structure may be provided.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 401 |
| 403 | <p>403 FORBIDDEN If the API consumer is not allowed to perform a particular request to a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided. It should include in the "detail" attribute information about the source of the problem, and may indicate how to solve it.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 403 |
| 405 | <p>405 METHOD NOT ALLOWED If a particular HTTP method is not supported for a particular resource, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 405 |

| HTTP Code | Description | Schema |
|-----------|--|------------------------------|
| 406 | <p>406 NOT ACCEPTABLE If the "Accept" header does not contain at least one name of a content type that is acceptable to the API producer, the API producer shall respond with this response code. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 406 |
| 500 | <p>500 INTERNAL SERVER ERROR If there is an application error not related to the client's input that cannot be easily mapped to any other HTTP response code ("catch all error"), the API producer shall respond with this response code. The "ProblemDetails" structure shall be provided, and shall include in the "detail" attribute more information about the source of the problem.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 500 |
| 503 | <p>503 SERVICE UNAVAILABLE If the API producer encounters an internal overload situation of itself or of a system it relies on, it should respond with this response code, following the provisions in IETF RFC 7231 for the use of the "Retry-After" HTTP header and for the alternative to refuse the connection. The "ProblemDetails" structure may be omitted.</p> <p>Headers :</p> <p>Content-Type (string) : The MIME type of the body of the response.</p> <p>WWW-Authenticate (string) : Challenge if the corresponding HTTP request has not provided authorization, or error details if the corresponding HTTP request has provided an invalid authorization token.</p> <p>Version (string) : Version of the API used in the response.</p> | Response 503 |

Response 400

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 401

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 403

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 405

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 406

| Name | Description | Schema |
|----------------------------------|--|--------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |

| Name | Description | Schema |
|------------------------------------|---|--------------|
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 500

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |

| Name | Description | Schema |
|---------------------------------|---|--------------|
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |

Response 503

| Name | Description | Schema |
|------------------------------------|---|--------------|
| detail <i>required</i> | A human-readable explanation specific to this occurrence of the problem. | string |
| instance <i>optional</i> | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| status <i>required</i> | The HTTP status code for this occurrence of the problem. The HTTP status code ([RFC7231], Section 6) generated by the origin server for this occurrence of the problem. | integer |
| title <i>optional</i> | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem, except for purposes of localization. If type is given and other than "about:blank", this attribute shall also be provided. A short, human-readable summary of the problem type. It SHOULD NOT change from occurrence to occurrence of the problem, except for purposes of localization (e.g., using proactive content negotiation; see [RFC7231], Section 3.4). | string |

| Name | Description | Schema |
|--------------------------------|--|--------------|
| type <i>optional</i> | A URI reference according to IETF RFC 3986 [5] that identifies the problem type. It is encouraged that the URI provides human-readable documentation for the problem (e.g. using HTML) when dereferenced. When this member is not present, its value is assumed to be "about:blank". | string (URI) |