SOL003 - VNF Lifecycle Operation Granting interface

Overview

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IMPORTANT
Please note that this file might be not aligned to the current version of the ETSI Group Specification it refers to. In case of discrepancies the published ETSI Group Specification takes precedence.

In clause 4.3.2 of ETSI GS NFV-SOL 003 v2.4.1, an attribute-based filtering mechanism is defined. This mechanism is currently not included in the corresponding OpenAPI design for this GS version. Changes to the attribute-based filtering mechanism are being considered in v2.5.1 of this GS for inclusion in the corresponding future ETSI NFV OpenAPI design. Please report bugs to https://forge.etsi.org/bugzilla/buglist.cgi?component=Nfv-Openapis&list_id=61&product=NFV&resolution=

Version information

Version : 1.3.0-impl:etsi.org:ETSI_NFV_OpenAPI:1

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 : /grant/v1
Schemes : HTTPS

Consumes

• application/json

Produces

• application/json
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

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>Header</td>
<td>Version</td>
<td>Version of the API requested to use when responding to this request.</td>
<td>string</td>
</tr>
<tr>
<td></td>
<td>optional</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Responses

<table>
<thead>
<tr>
<th>HTTP Code</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>200 OK 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.</td>
<td>Response 200</td>
</tr>
<tr>
<td>HTTP Code</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>400</td>
<td>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be proper specified in the &quot;ProblemDetails&quot; 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 &quot;ProblemDetails&quot; structure shall be provided, and should include in the &quot;detail&quot; 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 &quot;ProblemDetails&quot; structure shall be provided, and should include in the &quot;detail&quot; 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 (&quot;catch all error&quot;), the API producer shall respond with this response code. The &quot;ProblemDetails&quot; structure shall be provided, and shall include in the &quot;detail&quot; 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.</td>
<td>Response 400</td>
</tr>
</tbody>
</table>

**Headers**:

- **Content-Type** (string) : The MIME type of the body of the response.
- **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.
- **Version** (string) : Version of the API used in the response.
<table>
<thead>
<tr>
<th>HTTP Code</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>401</strong></td>
<td>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.</td>
<td><strong>Response 401</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Headers</strong> :</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Content-Type (string) : The MIME type of the body of the response.</td>
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<td>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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Version (string) : Version of the API used in the response.</td>
<td></td>
</tr>
<tr>
<td><strong>403</strong></td>
<td>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 &quot;ProblemDetails&quot; structure shall be provided. It should include in the &quot;detail&quot; attribute information about the source of the problem, and may indicate how to solve it.</td>
<td><strong>Response 403</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Headers</strong> :</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Content-Type (string) : The MIME type of the body of the response.</td>
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<tr>
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<td>--------</td>
</tr>
<tr>
<td>404</td>
<td>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 &quot;ProblemDetails&quot; structure may be provided, including in the &quot;detail&quot; 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. <strong>Headers</strong>:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Content-Type (string) : The MIME type of the body of the response.</td>
<td><strong>Response 404</strong></td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Version (string) : Version of the API used in the response.</td>
<td></td>
</tr>
<tr>
<td>405</td>
<td>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 &quot;ProblemDetails&quot; structure may be omitted. <strong>Headers</strong>:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Content-Type (string) : The MIME type of the body of the response.</td>
<td><strong>Response 405</strong></td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Version (string) : Version of the API used in the response.</td>
<td></td>
</tr>
<tr>
<td>406</td>
<td>406 NOT ACCEPTABLE If the &quot;Accept&quot; HTTP 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 &quot;ProblemDetails&quot; structure may be omitted. <strong>Headers</strong>:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Content-Type (string) : The MIME type of the body of the response.</td>
<td><strong>Response 406</strong></td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Version (string) : Version of the API used in the response.</td>
<td></td>
</tr>
<tr>
<td>HTTP Code</td>
<td>Description</td>
<td>Schema</td>
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</tr>
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</table>
| 413       | 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. **Headers**:
  - Content-Type (string): The MIME type of the body of the response.
  - 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.
  - Version (string): Version of the API used in the response.                                                                                               |        |
| 414       | 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. **Headers**:
  - Content-Type (string): The MIME type of the body of the response.
  - 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.
  - Version (string): Version of the API used in the response.                                                                                               |        |
| 416       | 416 Range Not Satisfiable **Headers**:
  - Content-Type (string): The MIME type of the body of the response.
  - 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.
  - Version (string): Version of the API used in the response.                                                                                               |        |
<table>
<thead>
<tr>
<th>HTTP Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>422</td>
<td>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 &quot;ProblemDetails&quot; structure shall be provided, and should include in the &quot;detail&quot; attribute more information about the source of the problem. This error response code is only applicable for methods that have a request body. <strong>Headers</strong>&lt;br&gt;Content-Type (string) : The MIME type of the body of the response.&lt;br&gt;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.&lt;br&gt;Version (string) : Version of the API used in the response.</td>
<td>Response 422</td>
</tr>
<tr>
<td>429</td>
<td>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 (&quot;rate limiting&quot;), the API producer shall respond with this response code, following the provisions in IETF RFC 6585 [17] for the use of the &quot;Retry-After&quot; HTTP header. The &quot;ProblemDetails&quot; structure shall be provided and shall include in the &quot;detail&quot; 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. <strong>Headers</strong>&lt;br&gt;Content-Type (string) : The MIME type of the body of the response.&lt;br&gt;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.&lt;br&gt;Version (string) : Version of the API used in the response.</td>
<td>Response 429</td>
</tr>
<tr>
<td>HTTP Code</td>
<td>Description</td>
<td>Schema</td>
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<tr>
<td>-----------</td>
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</tr>
<tr>
<td>500</td>
<td>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 (&quot;catch all error&quot;), the API producer shall respond with this response code. The &quot;ProblemDetails&quot; structure shall be provided, and shall include in the &quot;detail&quot; attribute more information about the source of the problem. Headers:</td>
<td>Response 500</td>
</tr>
<tr>
<td></td>
<td>Content-Type (string) : The MIME type of the body of the response. 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. Version (string) : Version of the API used in the response.</td>
<td></td>
</tr>
<tr>
<td>503</td>
<td>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 &quot;Retry-After&quot; HTTP header and for the alternative to refuse the connection. The &quot;ProblemDetails&quot; structure may be omitted. Headers:</td>
<td>Response 503</td>
</tr>
<tr>
<td></td>
<td>Content-Type (string) : The MIME type of the body of the response. 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. Version (string) : Version of the API used in the response.</td>
<td></td>
</tr>
<tr>
<td>504</td>
<td>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. Headers:</td>
<td>Response 504</td>
</tr>
<tr>
<td></td>
<td>Content-Type (string) : The MIME type of the body of the response. 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. Version (string) : Version of the API used in the response.</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>apiVersions</td>
<td>Version(s) supported for the API signaled by the uriPrefix attribute.</td>
<td><code>&lt; apiVersions &gt;</code> array</td>
</tr>
<tr>
<td>uriprefix</td>
<td>Specifies the URI prefix for the API, in the following form {apiRoot}/{apiName}/{apiMajorVersion}/.</td>
<td>string</td>
</tr>
</tbody>
</table>

**apiVersions**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>isDeprecated</td>
<td>If such information is available, this attribute indicates whether use of the version signaled by the version attribute is deprecated (true) or not (false). A deprecated version is still supported by the API producer but is recommended not to be used any longer. When a version is no longer supported, it does not appear in the response body.</td>
<td>boolean</td>
</tr>
<tr>
<td>retirementDate</td>
<td>Date-time stamp. Representation: String formatted according to IETF RFC 3339.</td>
<td>string (date-time)</td>
</tr>
<tr>
<td>version</td>
<td>Identifies a supported version. The value of the version attribute shall be a version identifier as specified in clause 9.1 (SOL013).</td>
<td>string</td>
</tr>
</tbody>
</table>

**Response 400**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

Response 401

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
</tbody>
</table>
### type

**optional**

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".

**Schema**

string (URI)

---

### Response 403

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>detail</strong></td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td><strong>instance</strong></td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td><strong>status</strong></td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td><strong>title</strong></td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td><strong>type</strong></td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

---

### Response 404

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>detail</strong></td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
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<td>Name</td>
<td>Description</td>
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<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
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<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

Response 405

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
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<tr>
<td>detail</td>
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<td>string (URI)</td>
</tr>
</tbody>
</table>

### Response 406

<table>
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<tbody>
<tr>
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</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Response 413</strong></td>
<td></td>
</tr>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td><strong>Response 414</strong></td>
<td></td>
</tr>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

Response 416

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

Response 422

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
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</table>

**Response 429**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

**Response 500**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

Response 503

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

Response 504

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
</tbody>
</table>
POST /grants

Description

Grant Lifecycle Operation. The POST method requests a grant for a particular VNF lifecycle operation. This method shall follow the provisions specified in the tables 9.4.2.3.1-1 and 9.4.2.3.1-2 for URI query parameters, request and response data structures, and response codes. As the result of successfully processing this request, a new "Individual grant" resource shall be created. In the synchronous case which is indicated by responding with "201 Created", that resource shall be created before the 200 OK response is returned. In the asynchronous case which is indicated by responding with "202 Accepted", this resource may be created after the response is returned.

Parameters

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>Header</td>
<td>Accept</td>
<td>Content-Types that are acceptable for the response. Reference: IETF RFC 7231</td>
<td>string</td>
</tr>
<tr>
<td>Header</td>
<td>Authorization</td>
<td>The authorization token for the request. Reference: IETF RFC 7235</td>
<td>string</td>
</tr>
<tr>
<td>Header</td>
<td>Content-Type</td>
<td>The MIME type of the body of the request. Reference: IETF RFC 7231</td>
<td>string</td>
</tr>
<tr>
<td>Header</td>
<td>Version</td>
<td>Version of the API requested to use when responding to this request.</td>
<td>string</td>
</tr>
<tr>
<td>Body</td>
<td>GrantRequest</td>
<td></td>
<td>GrantRequest</td>
</tr>
</tbody>
</table>

GrantRequest

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>_links</td>
<td>Links to resources related to this request.</td>
<td>_links</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>addResources</td>
<td>List of resource definitions in the VNFD for resources to be added by the LCM operation which is related to this grant request, with one entry per resource. If the granting request is for InstantiateVNF, either instantiationLevel or addResources shall be present.</td>
<td>&lt; addResources &gt; array</td>
</tr>
<tr>
<td>additionalParams</td>
<td>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 8259. In the following example, a list of key-value pairs with four keys (&quot;aString&quot;, &quot;aNumber&quot;, &quot;anArray&quot; and &quot;anObject&quot;) is provided to illustrate that the values associated with different keys can be of different type.</td>
<td>object</td>
</tr>
<tr>
<td>flavourId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>instantiationLevelId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>isAutomaticInvocation</td>
<td>Set to true if this VNF LCM operation occurrence has been triggered by an automated procedure inside the VNFM (i.e. ScaleVnf / ScaleVnfToLevel triggered by auto-scale, or HealVnf triggered by auto-heal). Set to false otherwise.</td>
<td>boolean</td>
</tr>
<tr>
<td>operation</td>
<td>The enumeration GrantedLcmOperationType defines the permitted values to represent VNF lifecycle operation types in grant requests. Value</td>
<td>Description ——</td>
</tr>
<tr>
<td></td>
<td>INSTANTIATE</td>
<td>Represents the &quot;Instantiate VNF&quot; LCM operation. SCALE</td>
</tr>
<tr>
<td></td>
<td>enum</td>
<td>(INSTANTIATE, SCALE, SCALE_TO_LEVEL, CHANGE_FLAVOUR, TERMINATE, HEAL, OPERATE, CHANGE_EXT_CONN)</td>
</tr>
</tbody>
</table>
## Placement Constraints

Placement constraints that the VNFM may send to the NFVO in order to influence the resource placement decision. If sent, the NFVO shall take the constraints into consideration when making resource placement decisions, and shall reject the grant if they cannot be honoured. The affinity/anti-affinity rules defined in the VNFD, and the placement constraints in the GrantVnfLifecycleOperation as defined in this clause should be conflict-free. In case of conflicts, the placement constraints in the GrantVnfLifecycleOperation shall take precedence. Passing constraints allows the VNFM or the lifecycle management scripts to influence resource placement decisions by the NFVO to ensure VNF properties such as performance or fault tolerance. If fallbackBestEffort is present in placement constraints and set to “true”, the NFVO shall process the Affinity/AntiAffinity constraint in a best effort manner, in which case, if specified resources cannot be allocated based on specified placement constraint, the NFVO looks for an alternate best effort placement for the specified resources to be granted. In the best effort anti-affinity case, the resources are expected to be spread optimally over all available instances of scope (e.g. zones), and in the best effort affinity case, they are expected to be distributed optimally over fewer possible instances of scope.

## Remove Resources

Provides the definitions of resources to be removed by the LCM operation which is related to this grant request, with one entry per resource.

## Temporary Resources

List of resource definitions in the VNFD for resources to be temporarily instantiated during the runtime of the LCM operation which is related to this grant request, with one entry per resource. The NFVO will assume that the VNFM will be responsible to both allocate and release the temporary resource during the runtime of the LCM operation. This means, the resource can be allocated and consumed after the "start" notification for the LCM operation is sent by the VNFM, and the resource will be released before the "result" notification of the VNF LCM operation is sent by the VNFM.

## Update Resources

Provides the definitions of resources to be modified by the LCM operation which is related to this grant request, with one entry per resource.
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>vimConstraints</td>
<td>Used by the VNFM to require that multiple resources are managed through the same VIM connection. If sent, the NFVO shall take the constraints into consideration when making VIM selection decisions, and shall reject the grant if they cannot be honoured. This attribute shall be supported if VNF-related Resource Management in direct mode is applicable. The applicability and further details of this attribute for indirect mode are left for future specification.</td>
<td><code>&lt;vimConstraints &gt; array</code></td>
</tr>
<tr>
<td>vnfInstanceId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vnfLcmOpOccId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vnfId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
</tbody>
</table>

_links

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>vnfInstanceId</td>
<td>This type represents a link to a resource using an absolute URI.</td>
<td>vnfInstanceId</td>
</tr>
<tr>
<td>vnfLcmOpOccId</td>
<td>This type represents a link to a resource using an absolute URI.</td>
<td>vnfLcmOpOcc</td>
</tr>
</tbody>
</table>

_vnfInstance_

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>href</td>
<td>String formatted according to IETF RFC 3986.</td>
<td>string</td>
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_vnfLcmOpOcc_

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>href</td>
<td>String formatted according to IETF RFC 3986.</td>
<td>string</td>
</tr>
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**addResources**
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
<tr>
<td>resource</td>
<td>This type represents the information that allows addressing a virtualised resource that is used by a VNF instance. Information about the resource is available from the VIM.</td>
<td>resource</td>
</tr>
<tr>
<td>resourceTemplateId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>Type of the resource definition referenced. Permitted values: * COMPUTE * VL * STORAGE * LINKPORT</td>
<td>enum (COMPUTE, VL, STORAGE, LINKPORT)</td>
</tr>
<tr>
<td>vduId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
</tbody>
</table>

resource

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>resourceId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimLevelResourceType</td>
<td>The value set of the &quot;vimLevelResourceType&quot; attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. This value set is different from the value set of the &quot;type&quot; attribute in the ResourceDefinition (refer to clause 9.5.3.2 in SOL003).</td>
<td>string</td>
</tr>
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placementConstraints
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>affinityOrAntiAffinity</td>
<td>The type of the constraint. Permitted values: * AFFINITY * ANTI_AFFINITY</td>
<td>enum (AFFINITY, ANTI_AFFINITY)</td>
</tr>
<tr>
<td>fallbackBestEffort</td>
<td>The Boolean is a data type having two values (true and false).</td>
<td>boolean</td>
</tr>
<tr>
<td>resource</td>
<td>References to resources in the constraint rule.</td>
<td>&lt; resource &gt; array</td>
</tr>
<tr>
<td>scope</td>
<td>The scope of the placement constraint indicating the category of the &quot;place&quot; where the constraint applies. Permitted values: * NFVI_POP * ZONE * ZONE_GROUP * NFVI_NODE</td>
<td>enum (NFVI_POP, ZONE, ZONE_GROUP, NFVI_NODE)</td>
</tr>
</tbody>
</table>

### resource

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>idType</td>
<td>The type of the identifier. Permitted values: * RES_MGMT: Resource-management-level identifier; this identifier is managed by the VIM in the direct mode of VNF-related resource management, and is managed by the NFVO in the indirect mode) * GRANT: Reference to the identifier of a &quot;ResourceDefinition&quot; structure in the &quot;GrantRequest&quot; structure.</td>
<td>enum (RES_MGMT, GRANT)</td>
</tr>
<tr>
<td>resourceId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
</tbody>
</table>

### removeResources
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
<tr>
<td>resource</td>
<td>This type represents the information that allows addressing a virtualised resource that is used by a VNF instance. Information about the resource is available from the VIM.</td>
<td>resource</td>
</tr>
<tr>
<td>resourceTemp</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>Type of the resource definition referenced. Permitted values: * COMPUTE * VL * STORAGE * LINKPORT</td>
<td>enum (COMPUTE, VL, STORAGE, LINKPORT)</td>
</tr>
<tr>
<td>vduId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
</tbody>
</table>

### resource

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>resourceId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimLevelResourceType</td>
<td>The value set of the &quot;vimLevelResourceType&quot; attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. This value set is different from the value set of the &quot;type&quot; attribute in the ResourceDefinition (refer to clause 9.5.3.2 in SOL003).</td>
<td>string</td>
</tr>
</tbody>
</table>

### tempResources
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
<tr>
<td>resource</td>
<td>This type represents the information that allows addressing a virtualised resource that is used by a VNF instance. Information about the resource is available from the VIM.</td>
<td>resource</td>
</tr>
<tr>
<td>resourceTemplateId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>Type of the resource definition referenced. Permitted values: * COMPUTE * VL * STORAGE * LINKPORT</td>
<td>enum</td>
</tr>
<tr>
<td>vduId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
</tbody>
</table>

**resource**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>resourceId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimLevelResourceType</td>
<td>The value set of the &quot;vimLevelResourceType&quot; attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. This value set is different from the value set of the &quot;type&quot; attribute in the ResourceDefinition (refer to clause 9.5.3.2 in SOL003).</td>
<td>string</td>
</tr>
</tbody>
</table>

**updateResources**
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
<tr>
<td>resource</td>
<td>This type represents the information that allows addressing a virtualised resource that is used by a VNF instance. Information about the resource is available from the VIM.</td>
<td>resource</td>
</tr>
<tr>
<td>resourceTemplateId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>Type of the resource definition referenced. Permitted values: * COMPUTE * VL * STORAGE * LINKPORT</td>
<td>enum (COMPUTE, VL, STORAGE, LINKPORT)</td>
</tr>
<tr>
<td>vduId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
</tbody>
</table>

**resource**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>resourceId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimLevelResourceType</td>
<td>The value set of the &quot;vimLevelResourceType&quot; attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. This value set is different from the value set of the &quot;type&quot; attribute in the ResourceDefinition (refer to clause 9.5.3.2 in SOL003).</td>
<td>string</td>
</tr>
</tbody>
</table>

**vimConstraints**
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>resource required</td>
<td>References to resources in the constraint rule. The NFVO shall ensure that all resources in this list are managed through the same VIM connection. If &quot;sameResourceGroup&quot; is set to true, the NFVO shall further ensure that all resources in this list are part of the same infrastructure resource group in that VIM connection.</td>
<td>&lt; resource &gt; array</td>
</tr>
<tr>
<td>sameResourceGroup</td>
<td>If present and set to true, this signals that the constraint applies not only to the same VIM connection, but also to the same infrastructure resource group.</td>
<td>boolean</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>idType</td>
<td>The type of the identifier. Permitted values: * RES_MGMT: Resource-management-level identifier; this identifier is managed by the VIM in the direct mode of VNF-related resource management, and is managed by the NFVO in the indirect mode) * GRANT: Reference to the identifier of a &quot;ResourceDefinition&quot; structure in the &quot;GrantRequest&quot; structure.</td>
<td>enum (RES_MGMT, GRANT)</td>
</tr>
<tr>
<td>resourceId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
</tbody>
</table>

**Responses**
<table>
<thead>
<tr>
<th>HTTP Code</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
</table>
| 201       | 201 CREATED Shall be returned when the grant has been created successfully (synchronous mode). A representation of the created "Individual grant" resource shall be returned in the response body. The HTTP response shall include a "Location" HTTP header that indicates the URI of the "Individual grant" resource just created. **Headers**:
  - Content-Type (string) : The MIME type of the body of the response.
  - Location (string (url)) : The resource URI of the created VNF instance.
  - 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.
  - Version (string) : Version of the API used in the response. | Response 201 |
| 202       | 202 ACCEPTED Shall be returned when the request has been accepted for processing and it is expected to take some time to create the grant (asynchronous mode). The response body shall be empty. The HTTP response shall include a "Location" HTTP header that indicates the URI of the "Individual grant" resource that will be created once the granting decision has been made. **Headers**:
  - Location (string (url)) : The resource URI of the created VNF instance.
  - 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. | No Content |
<table>
<thead>
<tr>
<th>HTTP Code</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>400 BAD REQUEST 400 code can be returned in the following specified cases, the specific cause has to be properly specified in the &quot;ProblemDetails&quot; 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 &quot;ProblemDetails&quot; structure shall be provided, and should include in the &quot;detail&quot; 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 &quot;ProblemDetails&quot; structure shall be provided, and should include in the &quot;detail&quot; 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 (&quot;catch all error&quot;), the API producer shall respond with this response code. The &quot;ProblemDetails&quot; structure shall be provided, and shall include in the &quot;detail&quot; 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 code. 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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Headers</strong> :&lt;br&gt;Content-Type (string) : The MIME type of the body of the response.&lt;br&gt;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.&lt;br&gt;Version (string) : Version of the API used in the response.</td>
<td>Response 400</td>
</tr>
<tr>
<td>HTTP Code</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>401</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Headers:</strong></td>
<td>Response 401</td>
</tr>
<tr>
<td></td>
<td>Content-Type (string) : The MIME type of the body of the response.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Version (string) : Version of the API used in the response.</td>
<td></td>
</tr>
<tr>
<td>403</td>
<td>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 &quot;ProblemDetails&quot; structure shall be provided. It should include in the &quot;detail&quot; attribute information about the source of the problem, and may indicate how to solve it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Headers:</strong></td>
<td>Response 403</td>
</tr>
<tr>
<td></td>
<td>Content-Type (string) : The MIME type of the body of the response.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Version (string) : Version of the API used in the response.</td>
<td></td>
</tr>
<tr>
<td>HTTP Code</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>--------</td>
</tr>
</tbody>
</table>
| 404       | 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. **Headers**:
  - Content-Type (string) : The MIME type of the body of the response.
  - 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.
  - Version (string) : Version of the API used in the response. | Response 404 |
| 405       | 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. **Headers**:
  - Content-Type (string) : The MIME type of the body of the response.
  - 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.
  - Version (string) : Version of the API used in the response. | Response 405 |
| 406       | 406 NOT ACCEPTABLE If the "Accept" HTTP 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. **Headers**:
  - Content-Type (string) : The MIME type of the body of the response.
  - 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.
  - Version (string) : Version of the API used in the response. | Response 406 |
<table>
<thead>
<tr>
<th>HTTP Code</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
</table>
| 422       | 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. **Headers:**  
Content-Type (string) : The MIME type of the body of the response.  
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.  
Version (string) : Version of the API used in the response. |        |
| 500       | 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. **Headers:**  
Content-Type (string) : The MIME type of the body of the response.  
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.  
Version (string) : Version of the API used in the response. |        |
| 503       | 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. **Headers:**  
Content-Type (string) : The MIME type of the body of the response.  
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.  
Version (string) : Version of the API used in the response. |        |
<table>
<thead>
<tr>
<th>HTTP Code</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>504</td>
<td>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.</td>
<td>Response 504</td>
</tr>
</tbody>
</table>
|           | **Headers:**  
|           | - **Content-Type** (string): The MIME type of the body of the response.  
|           | - **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.  
|           | - **Version** (string): Version of the API used in the response.                                                                                                                                         |                             |

### Response 201

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>_links</td>
<td>Links to resources related to this resource.</td>
<td>_links</td>
</tr>
<tr>
<td>addResources</td>
<td>List of resources that are approved to be added, with one entry per resource.</td>
<td>&lt;</td>
</tr>
<tr>
<td>additionalParams</td>
<td>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 8259. In the following example, a list of key-value pairs with four keys (&quot;aString&quot;, &quot;aNumber&quot;, &quot;anArray&quot; and &quot;anObject&quot;) is provided to illustrate that the values associated with different keys can be of different type.</td>
<td>object</td>
</tr>
<tr>
<td>computeReservationId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>extManagedVirtualLinks</td>
<td>Information about internal VLs that are managed by other entities than the VNFM. The indication of externally-managed internal VLs is needed in case networks have been pre-configured for use with certain VNFs, for instance to ensure that these networks have certain properties such as security or acceleration features, or to address particular network topologies. The present document assumes that externally-managed internal VLs are managed by the NFVO and created towards the VIM. External and/or externally-managed internal VLs can be passed in VNF lifecycle management operation requests such as InstantiateVnf or ChangeVnfFlavor, and/or in the grant response. The NFVO may choose to override in the grant response external and/or externally-managed VL instances that have been passed previously in the associated VNF lifecycle management request, if the lifecycle management request has originated from the NFVO itself.</td>
<td>&lt;extManagedVirtualLinks&gt; array</td>
</tr>
<tr>
<td>id</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>networkReservationId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>removeResources</td>
<td>List of resources that are approved to be removed, with one entry per resource.</td>
<td>&lt;removeResources&gt; array</td>
</tr>
<tr>
<td>storageReservationId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>tempResources</td>
<td>List of resources that are approved to be temporarily instantiated during the runtime of the lifecycle operation, with one entry per resource.</td>
<td>&lt; tempResources &gt; array</td>
</tr>
<tr>
<td>updateResources</td>
<td>List of resources that are approved to be modified, with one entry per resource.</td>
<td>&lt; updateResources &gt; array</td>
</tr>
<tr>
<td>vimAssets</td>
<td>Information about assets for the VNF that are managed by the NFVO in the VIM, such as software images and virtualised compute resource flavours. The Grant response allows the NFVO to pass to the VNFM VIM assets related to the VNF package that is identified by the vnfdId attribute in the corresponding Grant request. The NFVO may send in each Grant response the full set of VIM assets related to the VNF package defined by the vnfdId in the related Grant request, but shall send this information if the vnfdId in the related Grant request differs from the vnfdId passed in the previous Grant request, or if the Grant response is related to an InstantiateVnf operation. The set of VIM assets shall not change between subsequent Grant responses if the vnfdId has not changed. During each LCM operation occurrence, the VIM assets that relate to the VNF package identified by the current value of the vnfdId attribute in the “VnfInstance” structure shall be used by the VNFM for newly created resources. If the VNF package identifier of the VNF instance has been updated, VIM assets that relate to the previously-used VNF package(s), and that were communicated in previous Grant responses, apply to existing resources.</td>
<td>vimAssets</td>
</tr>
</tbody>
</table>
## vimConnections

**Optional**

Provides information regarding VIM connections that are approved to be used by the VNFM to allocate resources, and provides parameters of these VIM connections. The VNFM shall update the "vimConnectionInfo" attribute of the "VnfInstanceId" structure by adding unknown entries received in this attribute. This attribute is not intended for the modification of VimConnection entries passed earlier; for that, the VnfInfoModificationRequest structure shall be used. This attribute shall only be supported when VNF-related Resource Management in direct mode is applicable. In direct mode, this parameter shall be absent if the VIM information was configured to the VNFM in another way, present otherwise. This interface allows to signal the use of multiple VIMs per VNF. However, due to the partial support of this feature in the present release, it is recommended in the present document that the number of entries in the "vims" attribute in the Grant is not greater than 1.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>vnfInstanceId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vnfLcmOpOccId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>zoneGroups</td>
<td>Information about groups of resource zones that are related and that the NFVO has chosen to fulfil a zoneGroup constraint in the GrantVnfLifecycleOperation request. This information confirms that the NFVO has honoured the zoneGroup constraints that were passed as part of &quot;placementConstraints&quot; in the GrantRequest.</td>
<td>array</td>
</tr>
<tr>
<td>zones</td>
<td>Identifies resource zones where the resources are approved to be allocated by the VNFM.</td>
<td>array</td>
</tr>
</tbody>
</table>

## _links

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>self</td>
<td>This type represents a link to a resource using an absolute URI.</td>
<td>self</td>
</tr>
<tr>
<td>vnfInstanceId</td>
<td>This type represents a link to a resource using an absolute URI.</td>
<td>vnfInstanceId</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td><code>vnfLcmOpOcc</code></td>
<td>This type represents a link to a resource using an absolute URI.</td>
<td><code>vnfLcmOpOcc</code></td>
</tr>
</tbody>
</table>

**self**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>href</code></td>
<td>String formatted according to IETF RFC 3986.</td>
<td><code>string</code></td>
</tr>
</tbody>
</table>

**vnfInstance**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>href</code></td>
<td>String formatted according to IETF RFC 3986.</td>
<td><code>string</code></td>
</tr>
</tbody>
</table>

**vnfLcmOpOcc**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>href</code></td>
<td>String formatted according to IETF RFC 3986.</td>
<td><code>string</code></td>
</tr>
</tbody>
</table>

**addResources**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>reservationId</code></td>
<td>An identifier with the intention of being globally unique.</td>
<td><code>string</code></td>
</tr>
<tr>
<td><code>resourceDefinitionId</code></td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td><code>string</code></td>
</tr>
<tr>
<td><code>resourceGroupId</code></td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td><code>string</code></td>
</tr>
<tr>
<td><code>resourceProviderId</code></td>
<td>An identifier with the intention of being globally unique.</td>
<td><code>string</code></td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>zoneId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
</tbody>
</table>

extManagedVirtualLinks

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>resourceId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vnfVirtualLinkDescId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
</tbody>
</table>

extVirtualLinks

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>extCps</td>
<td>External CPs of the VNF to be connected to this external VL.</td>
<td>&lt; extCps &gt; array</td>
</tr>
<tr>
<td>extLinkPorts</td>
<td>Externally provided link ports to be used to connect external connection points to this external VL. If this attribute is not present, the VNFM shall create the link ports on the external VL.</td>
<td>&lt; extLinkPorts &gt; array</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>id</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>resourceId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>optional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>optional</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### extCps

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>cpConfig</td>
<td>List of instance data that need to be configured on the CP instances created from the respective CPD.</td>
<td>&lt; cpConfig &gt; array</td>
</tr>
<tr>
<td>optional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cpdId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
<tr>
<td>required</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### cpConfig

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>cpInstanceId</td>
<td>An identifier that is unique for the respective type within a VNF instance, but may not be globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>optional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td><strong>cpProtocolData</strong></td>
<td>Parameters for configuring the network protocols on the link port that connects the CP to a VL. The following conditions apply to the attributes &quot;linkPortId&quot; and &quot;cpProtocolData&quot;: 1) The &quot;linkPortId&quot; and &quot;cpProtocolData&quot; attributes shall both be absent for the deletion of an existing external CP instance addressed by cpInstanceId. 2) At least one of these attributes shall be present for a to-be-created external CP instance or an existing external CP instance. 3) If the &quot;linkPortId&quot; attribute is absent, the VNFM shall create a link port. 4) If the &quot;cpProtocolData&quot; attribute is absent, the &quot;linkPortId&quot; 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. 5) If both &quot;cpProtocolData&quot; and &quot;linkPortId&quot; are provided, the API consumer shall ensure that the cpProtocolData can be used with the pre-created link port referenced by &quot;linkPortId&quot;.</td>
<td>&lt; cpProtocolData &gt; array</td>
</tr>
<tr>
<td><strong>linkPortId</strong></td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
</tbody>
</table>

### cpProtocolData

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ipOverEthernet</strong></td>
<td>This type represents network address data for IP over Ethernet.</td>
<td>ipOverEthernet</td>
</tr>
<tr>
<td><strong>layerProtocol</strong></td>
<td>Identifier of layer(s) and protocol(s). This attribute allows to signal the addition of further types of layer and protocol in future versions of the present document in a backwards-compatible way. In the current version of the present document, only IP over Ethernet is supported.</td>
<td>enum (IP_OVER_ETHERNET)</td>
</tr>
</tbody>
</table>

### ipOverEthernet

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ipAddresses</strong></td>
<td>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.</td>
<td>&lt; ipAddresses &gt; array</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>macAddress</td>
<td>A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons.</td>
<td>string (MAC)</td>
</tr>
</tbody>
</table>

**ipAddresses**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>addressRange</td>
<td>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.</td>
<td>addressRange</td>
</tr>
<tr>
<td>fixedAddresses</td>
<td>Fixed addresses to assign (from the subnet defined by &quot;subnetId&quot; if provided). Exactly one of &quot;fixedAddresses&quot;, &quot;numDynamicAddresses&quot; or &quot;ipAddressRange&quot; shall be present.</td>
<td>&lt; string (IP) &gt; array</td>
</tr>
<tr>
<td>numDynamicAddresses</td>
<td>Number of dynamic addresses to assign (from the subnet defined by &quot;subnetId&quot; if provided). Exactly one of &quot;fixedAddresses&quot;, &quot;numDynamicAddresses&quot; or &quot;ipAddressRange&quot; shall be present.</td>
<td>integer</td>
</tr>
<tr>
<td>subnetId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>The type of the IP addresses. Permitted values: IPV4, IPV6.</td>
<td>enum (IPV4, IPV6)</td>
</tr>
</tbody>
</table>

**addressRange**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>maxAddress</td>
<td>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.</td>
<td>string (IP)</td>
</tr>
<tr>
<td>minAddress</td>
<td>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.</td>
<td>string (IP)</td>
</tr>
</tbody>
</table>
### extLinkPorts

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>resourceHandle</td>
<td>This type represents the information that allows addressing a virtualised resource that is used by a VNF instance. Information about the resource is available from the VIM.</td>
<td>resourceHandle</td>
</tr>
</tbody>
</table>

### resourceHandle

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>resourceId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimLevelResourceType</td>
<td>The value set of the &quot;vimLevelResourceType&quot; attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. This value set is different from the value set of the &quot;type&quot; attribute in the ResourceDefinition (refer to clause 9.5.3.2 in SOL003).</td>
<td>string</td>
</tr>
</tbody>
</table>

### removeResources

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>reservationId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>resourceDefinitionId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>resourceGroupId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>zoneId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
</tbody>
</table>

**tempResources**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>reservationId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>resourceDefinitionId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
<tr>
<td>resourceGroupId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>zoneId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
</tbody>
</table>

**updateResources**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>reservationId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>resourceDefinitionId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
<tr>
<td>resourceGroupId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>zoneId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
</tbody>
</table>

**vimAssets**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>computeResourceFlavours</td>
<td>Mappings between virtual compute descriptors defined in the VNFD and compute resource flavours managed in the VIM.</td>
<td><code>&lt;computeResourceFlavours&gt; array</code></td>
</tr>
</tbody>
</table>
### softwareImages

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>softwareImages</td>
<td>Mappings between software images defined in the VNFD and software images managed in the VIM.</td>
<td><code>&lt; softwareImages &gt; array</code></td>
</tr>
</tbody>
</table>

### computeResourceFlavours

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimFlavourId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>vnfdVirtualComputeDescId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
</tbody>
</table>

### softwareImages

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimSoftwareImageId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>vnfdSoftwareImageId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
</tbody>
</table>
### vimConnections

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>accessInfo</strong></td>
<td>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 8259. In the following example, a list of key-value pairs with four keys (&quot;aString&quot;, &quot;aNumber&quot;, &quot;anArray&quot; and &quot;anObject&quot;) is provided to illustrate that the values associated with different keys can be of different type.</td>
<td>object</td>
</tr>
<tr>
<td><strong>extra</strong></td>
<td>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 8259. In the following example, a list of key-value pairs with four keys (&quot;aString&quot;, &quot;aNumber&quot;, &quot;anArray&quot; and &quot;anObject&quot;) is provided to illustrate that the values associated with different keys can be of different type.</td>
<td>object</td>
</tr>
<tr>
<td><strong>id</strong></td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td><strong>interfaceInfo</strong></td>
<td>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 8259. In the following example, a list of key-value pairs with four keys (&quot;aString&quot;, &quot;aNumber&quot;, &quot;anArray&quot; and &quot;anObject&quot;) is provided to illustrate that the values associated with different keys can be of different type.</td>
<td>object</td>
</tr>
<tr>
<td><strong>vimId</strong></td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td><strong>vimType</strong></td>
<td>Discriminator for the different types of the VIM information. The value of this attribute determines the structure of the &quot;interfaceInfo&quot; and &quot;accessInfo&quot; attributes, based on the type of the VIM. The set of permitted values is expected to change over time as new types or versions of VIMs become available. The ETSI NFV registry of VIM-related information provides access to information about VimConnectionInfo definitions for various VIM types. The structure of the registry is defined in Annex C of SOL003.</td>
<td>string</td>
</tr>
</tbody>
</table>
### zoneGroups

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>zoneId</strong></td>
<td>References of identifiers of &quot;ZoneInfo&quot; structures, each of which provides information about a resource zone that belongs to this group.</td>
<td>&lt; string &gt; array</td>
</tr>
<tr>
<td><strong>required</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### zones

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>id</strong></td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
<tr>
<td><strong>required</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>resourceProviderId</strong></td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td><strong>optional</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>vimConnectionId</strong></td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td><strong>optional</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>zoneId</strong></td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td><strong>required</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Response 400

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>detail</strong></td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td><strong>required</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>instance</strong></td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td><strong>optional</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>status</strong></td>
<td>The HTTP status code for this occurrence of the problem. The HTTP status code (<a href="https://tools.ietf.org/html/rfc7231">RFC7231</a>, Section 6) generated by the origin server for this occurrence of the problem.</td>
<td>integer</td>
</tr>
<tr>
<td><strong>required</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>title</td>
<td>A 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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”.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

Response 401

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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).</td>
<td>string</td>
</tr>
</tbody>
</table>
### Response 403

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>detail</strong></td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td><strong>instance</strong></td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td><strong>status</strong></td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td><strong>title</strong></td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td><strong>type</strong></td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

### Response 404

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

**Response 405**

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

A 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).

**Schema**

```
string
```

---

### type
*optional*

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".

**Schema**

```
string (URI)
```

---

**Response 406**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
</table>
| **detail**
  *required* | A human-readable explanation specific to this occurrence of the problem. | string |
| **instance**
  *optional* | A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced. | string (URI) |
| **status**
  *required* | 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**
  *optional* | A 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 |
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

### Response 422

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

### Response 500

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

**Response 503**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

**Response 504**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

**GET /grants/{grantId}**

**Description**

Grant Lifecycle Operation. The GET method reads a grant. This method shall follow the provisions specified in the tables 9.4.3.3.2-1 and 9.4.3.3.2-2 for URI query parameters, request and response data structures, and response codes.

**Parameters**

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>Header</td>
<td>Accept <em>required</em></td>
<td>Content-Types that are acceptable for the response. Reference: IETF RFC 7231</td>
<td>string</td>
</tr>
<tr>
<td>Header</td>
<td>Authorization <em>optional</em></td>
<td>The authorization token for the request. Reference: IETF RFC 7235</td>
<td>string</td>
</tr>
<tr>
<td>Header</td>
<td>Version <em>required</em></td>
<td>Version of the API requested to use when responding to this request.</td>
<td>string</td>
</tr>
<tr>
<td>Path</td>
<td>grantId <em>required</em></td>
<td>Identifier of the grant. This identifier can be retrieved from the resource referenced by the &quot;Location&quot; HTTP header in the response to a POST request granting a new VNF lifecycle operation. It can also be retrieved from the &quot;id&quot; attribute in the payload body of that response.</td>
<td>string</td>
</tr>
</tbody>
</table>

**Responses**
<table>
<thead>
<tr>
<th>HTTP Code</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
</table>
| 200       | 200 OK Shall be returned when the grant has been read successfully. A representation of the "Individual grant" resource shall be returned in the response body. **Headers** :  
- **Content-Type** (string) : The MIME type of the body of the response.  
- **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.  
- **Version** (string) : Version of the API used in the response. | **Response 200** |
| 202       | 202 ACCEPTED Shall be returned when the process of creating the grant is ongoing, no grant is available yet. The response body shall be empty. **Headers** :  
- **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.  
- **Version** (string) : Version of the API used in the response. | **No Content** |
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.

**Headers**:

- **Content-Type** (string) : The MIME type of the body of the response.
- **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.
- **Version** (string) : Version of the API used in the response.
<table>
<thead>
<tr>
<th>HTTP Code</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>401</td>
<td>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. <strong>Headers</strong>:&lt;br&gt;Content-Type (string) : The MIME type of the body of the response.&lt;br&gt;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.&lt;br&gt;Version (string) : Version of the API used in the response.</td>
<td>Response 401</td>
</tr>
<tr>
<td>403</td>
<td>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 &quot;ProblemDetails&quot; structure shall be provided. It should include in the &quot;detail&quot; attribute information about the source of the problem, and may indicate how to solve it. <strong>Headers</strong>:&lt;br&gt;Content-Type (string) : The MIME type of the body of the response.&lt;br&gt;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.&lt;br&gt;Version (string) : Version of the API used in the response.</td>
<td>Response 403</td>
</tr>
<tr>
<td>HTTP Code</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>--------</td>
</tr>
</tbody>
</table>
| 404       | 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. **Headers**:
- **Content-Type** (string) : The MIME type of the body of the response.
- **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.
- **Version** (string) : Version of the API used in the response. | Response 404 |
| 405       | 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. **Headers**:
- **Content-Type** (string) : The MIME type of the body of the response.
- **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.
- **Version** (string) : Version of the API used in the response. | Response 405 |
| 406       | 406 NOT ACCEPTABLE If the "Accept" HTTP 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. **Headers**:
- **Content-Type** (string) : The MIME type of the body of the response.
- **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.
- **Version** (string) : Version of the API used in the response. | Response 406 |
<table>
<thead>
<tr>
<th>HTTP Code</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
</table>
| 422       | 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. **Headers** :  
  * Content-Type (string) : The MIME type of the body of the response.  
  * 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.  
  * Version (string) : Version of the API used in the response. |
| 500       | 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. **Headers** :  
  * Content-Type (string) : The MIME type of the body of the response.  
  * 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.  
  * Version (string) : Version of the API used in the response. |
| 503       | 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. **Headers** :  
  * Content-Type (string) : The MIME type of the body of the response.  
  * 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.  
  * Version (string) : Version of the API used in the response. |
<table>
<thead>
<tr>
<th>HTTP Code</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
</table>
| 504       | 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. **Headers**:  
  Content-Type (string): The MIME type of the body of the response.  
  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.  
  Version (string): Version of the API used in the response. | Response 504 |

**Response 200**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>_links required</td>
<td>Links to resources related to this resource.</td>
<td>_links</td>
</tr>
<tr>
<td>addResources optional</td>
<td>List of resources that are approved to be added, with one entry per resource.</td>
<td>&lt; addResources &gt; array</td>
</tr>
<tr>
<td>additionalParams optional</td>
<td>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 8259. In the following example, a list of key-value pairs with four keys (&quot;aString&quot;, &quot;aNumber&quot;, &quot;anArray&quot; and &quot;anObject&quot;) is provided to illustrate that the values associated with different keys can be of different type.</td>
<td>object</td>
</tr>
<tr>
<td>computeReservationId optional</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>extManagedVirtualLinks</strong></td>
<td>Information about internal VLs that are managed by other entities than the VNFM. The indication of externally-managed internal VLs is needed in case networks have been pre-configured for use with certain VNFs, for instance to ensure that these networks have certain properties such as security or acceleration features, or to address particular network topologies. The present document assumes that externally-managed internal VLs are managed by the NFVO and created towards the VIM. External and/or externally-managed internal VLs can be passed in VNF lifecycle management operation requests such as InstantiateVnf or ChangeVnfFlavor, and/or in the grant response. The NFVO may choose to override in the grant response external and/or externally-managed VL instances that have been passed previously in the associated VNF lifecycle management request, if the lifecycle management request has originated from the NFVO itself.</td>
<td><code>&lt; extManagedVirtualLinks &gt; array</code></td>
</tr>
<tr>
<td><strong>extVirtualLinks</strong></td>
<td>Information about external VLs to connect the VNF to. External and/or externally-managed internal VLs can be passed in VNF lifecycle management operation requests such as InstantiateVnf or ChangeVnfFlavor, and/or in the grant response. The NFVO may choose to override in the grant response external and/or externally-managed VL instances that have been passed previously in the associated VNF lifecycle management request, if the lifecycle management request has originated from the NFVO itself.</td>
<td><code>&lt; extVirtualLinks &gt; array</code></td>
</tr>
<tr>
<td><strong>id</strong></td>
<td>An identifier with the intention of being globally unique.</td>
<td><code>string</code></td>
</tr>
<tr>
<td><strong>networkReservationId</strong></td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td><code>string</code></td>
</tr>
<tr>
<td><strong>removeResources</strong></td>
<td>List of resources that are approved to be removed, with one entry per resource.</td>
<td><code>&lt; removeResources &gt; array</code></td>
</tr>
<tr>
<td><strong>storageReservationId</strong></td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td><code>string</code></td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td><strong>Description</strong></td>
<td><strong>Schema</strong></td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td><code>tempResources</code></td>
<td>List of resources that are approved to be temporarily instantiated during the runtime of the lifecycle operation, with one entry per resource.</td>
<td><code>&lt; tempResources &gt; array</code></td>
</tr>
<tr>
<td><code>updateResources</code></td>
<td>List of resources that are approved to be modified, with one entry per resource.</td>
<td><code>&lt; updateResources &gt; array</code></td>
</tr>
<tr>
<td><code>vimAssets</code></td>
<td>Information about assets for the VNF that are managed by the NFVO in the VIM, such as software images and virtualised compute resource flavours. The Grant response allows the NFVO to pass to the VNFM VIM assets related to the VNF package that is identified by the vnfdId attribute in the corresponding Grant request. The NFVO may send in each Grant response the full set of VIM assets related to the VNF package defined by the vnfdId in the related Grant request, but shall send this information if the vnfdId in the related Grant request differs from the vnfdId passed in the previous Grant request, or if the Grant response is related to an InstantiateVnf operation. The set of VIM assets shall not change between subsequent Grant responses if the vnfdId has not changed. During each LCM operation occurrence, the VIM assets that relate to the VNF package identified by the current value of the vnfdId attribute in the “VnfInstance” structure shall be used by the VNFM for newly created resources. If the VNF package identifier of the VNF instance has been updated, VIM assets that relate to the previously-used VNF package(s), and that were communicated in previous Grant responses, apply to existing resources.</td>
<td><code>vimAssets</code></td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>vimConnections</td>
<td>Provides information regarding VIM connections that are approved to be used by the VNFM to allocate resources, and provides parameters of these VIM connections. The VNFM shall update the &quot;vimConnectionInfo&quot; attribute of the &quot;VnfInstance&quot; structure by adding unknown entries received in this attribute. This attribute is not intended for the modification of VimConnection entries passed earlier; for that, the VnfInfoModificationRequest structure shall be used. This attribute shall only be supported when VNF-related Resource Management in direct mode is applicable. In direct mode, this parameter shall be absent if the VIM information was configured to the VNFM in another way, present otherwise. This interface allows to signal the use of multiple VIMs per VNF. However, due to the partial support of this feature in the present release, it is recommended in the present document that the number of entries in the &quot;vims&quot; attribute in the Grant is not greater than 1.</td>
<td>&lt; vimConnections &gt; array</td>
</tr>
<tr>
<td>vnfInstanceId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vnfLcmOpOccId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>zoneGroups</td>
<td>Information about groups of resource zones that are related and that the NFVO has chosen to fulfil a zoneGroup constraint in the GrantVnfLifecycleOperation request. This information confirms that the NFVO has honoured the zoneGroup constraints that were passed as part of &quot;placementConstraints&quot; in the GrantRequest.</td>
<td>&lt; zoneGroups &gt; array</td>
</tr>
<tr>
<td>zones</td>
<td>Identifies resource zones where the resources are approved to be allocated by the VNFM.</td>
<td>&lt; zones &gt; array</td>
</tr>
</tbody>
</table>

_links

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>self</td>
<td>This type represents a link to a resource using an absolute URI.</td>
<td>self</td>
</tr>
<tr>
<td>vnfInstanceId</td>
<td>This type represents a link to a resource using an absolute URI.</td>
<td>vnfInstanceId</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>vnflcmOpOcc</td>
<td>This type represents a link to a resource using an absolute URI.</td>
<td>vnflcmOpOcc</td>
</tr>
<tr>
<td>self</td>
<td></td>
<td></td>
</tr>
<tr>
<td>href</td>
<td>String formatted according to IETF RFC 3986.</td>
<td>string</td>
</tr>
<tr>
<td>vnfinstance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>href</td>
<td>String formatted according to IETF RFC 3986.</td>
<td>string</td>
</tr>
<tr>
<td>vnflcmOpOcc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>href</td>
<td>String formatted according to IETF RFC 3986.</td>
<td>string</td>
</tr>
<tr>
<td>addResources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>reservationId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>resourceDefinitionId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
<tr>
<td>resourceGroupId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>zoneId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
<tr>
<td>id</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>resourceId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vnfVirtualLinkDescId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
<tr>
<td>extCps</td>
<td>External CPs of the VNF to be connected to this external VL.</td>
<td><code>&lt;extCps&gt;</code></td>
</tr>
<tr>
<td>extLinkPorts</td>
<td>Externally provided link ports to be used to connect external connection points to this external VL. If this attribute is not present, the VNFM shall create the link ports on the external VL.</td>
<td><code>&lt;extLinkPorts&gt;</code></td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>id</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>resourceId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
</tbody>
</table>

**extCps**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>cpConfig</td>
<td>List of instance data that need to be configured on the CP instances created from the respective CPD.</td>
<td>&lt; cpConfig &gt; array</td>
</tr>
<tr>
<td>cpdId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
</tbody>
</table>

**cpConfig**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>cpInstanceId</td>
<td>An identifier that is unique for the respective type within a VNF instance, but may not be globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td><strong>cpProtocolData</strong></td>
<td>Parameters for configuring the network protocols on the link port that connects the CP to a VL. The following conditions apply to the attributes &quot;linkPortId&quot; and &quot;cpProtocolData&quot;: 1) The &quot;linkPortId&quot; and &quot;cpProtocolData&quot; attributes shall both be absent for the deletion of an existing external CP instance addressed by cpInstanceId. 2) At least one of these attributes shall be present for a to-be-created external CP instance or an existing external CP instance. 3) If the &quot;linkPortId&quot; attribute is absent, the VNFM shall create a link port. 4) If the &quot;cpProtocolData&quot; attribute is absent, the &quot;linkPortId&quot; 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. 5) If both &quot;cpProtocolData&quot; and &quot;linkPortId&quot; are provided, the API consumer shall ensure that the cpProtocolData can be used with the pre-created link port referenced by &quot;linkPortId&quot;.</td>
<td><code>&lt; cpProtocolData &gt; array</code></td>
</tr>
<tr>
<td><strong>linkPortId</strong></td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
</tbody>
</table>

**cpProtocolData**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ipOverEthernet</strong></td>
<td>This type represents network address data for IP over Ethernet.</td>
<td>ipOverEthernet</td>
</tr>
<tr>
<td><strong>layerProtocol</strong></td>
<td>Identifier of layer(s) and protocol(s). This attribute allows to signal the addition of further types of layer and protocol in future versions of the present document in a backwards-compatible way. In the current version of the present document, only IP over Ethernet is supported.</td>
<td>enum (IP_OVER_Ethernet)</td>
</tr>
</tbody>
</table>

**ipOverEthernet**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ipAddresses</strong></td>
<td>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.</td>
<td><code>&lt; ipAddresses &gt; array</code></td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>macAddress</td>
<td>A MAC address. Representation: string that consists of groups of two hexadecimal digits, separated by hyphens or colons.</td>
<td>string (MAC)</td>
</tr>
<tr>
<td>ipAddresses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>addressRange</td>
<td>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.</td>
<td>addressRange</td>
</tr>
<tr>
<td>fixedAddresses</td>
<td>Fixed addresses to assign (from the subnet defined by &quot;subnetId&quot; if provided). Exactly one of &quot;fixedAddresses&quot;, &quot;numDynamicAddresses&quot; or &quot;ipAddressRange&quot; shall be present.</td>
<td>&lt; string (IP) &gt; array</td>
</tr>
<tr>
<td>numDynamicAddresses</td>
<td>Number of dynamic addresses to assign (from the subnet defined by &quot;subnetId&quot; if provided). Exactly one of &quot;fixedAddresses&quot;, &quot;numDynamicAddresses&quot; or &quot;ipAddressRange&quot; shall be present.</td>
<td>integer</td>
</tr>
<tr>
<td>subnetId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>The type of the IP addresses. Permitted values: IPV4, IPV6.</td>
<td>enum (IPV4, IPV6)</td>
</tr>
<tr>
<td>addressRange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>maxAddress</td>
<td>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.</td>
<td>string (IP)</td>
</tr>
<tr>
<td>minAddress</td>
<td>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.</td>
<td>string (IP)</td>
</tr>
</tbody>
</table>
### extLinkPorts

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td><strong>required</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>resourceHandle</td>
<td>This type represents the information that allows addressing a virtualised resource that is used by a VNF instance. Information about the resource is available from the VIM.</td>
<td>resourceHandle</td>
</tr>
<tr>
<td><strong>required</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### resourceHandle

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>resourceId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td><strong>required</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td><strong>optional</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td><strong>required</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vimLevelResourceType</td>
<td>The value set of the &quot;vimLevelResourceType&quot; attribute is within the scope of the VIM or the resource provider and can be used as information that complements the ResourceHandle. This value set is different from the value set of the &quot;type&quot; attribute in the ResourceDefinition (refer to clause 9.5.3.2 in SOL003).</td>
<td>string</td>
</tr>
<tr>
<td><strong>optional</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### removeResources

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>reservationId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td><strong>optional</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>resourceDefinitionId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
<tr>
<td><strong>required</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### resourceGroup

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>resourceGroupId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>zoneId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
</tbody>
</table>

### tempResources

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>reservationId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>resourceDefinitionId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
<tr>
<td>resourceGroupId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>zoneId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
</tbody>
</table>

**updateResources**

<table>
<thead>
<tr>
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<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>reservationId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>resourceDefinId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
</tr>
<tr>
<td>resourceGroup Id</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>zoneId</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td>string</td>
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</tbody>
</table>

**vimAssets**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
</table>
| computeResourceFlavours            | Mappings between virtual compute descriptors defined in the VNFD and compute resource flavours managed in the VIM.                                                                                           | <
<p>|                                     |                                                                                                                                                                                                                   | computeResourceFlavours &gt; array |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>softwareImages</td>
<td>Mappings between software images defined in the VNFD and software images managed in the VIM.</td>
<td>array</td>
</tr>
</tbody>
</table>

**computeResourceFlavours**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimFlavourId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>vnfdVirtualComputeDescId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
</tbody>
</table>

**softwareImages**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td>vimSoftwareImageId</td>
<td>An identifier maintained by the VIM or other resource provider. It is expected to be unique within the VIM instance.</td>
<td>string</td>
</tr>
<tr>
<td>vnfdSoftwareImageId</td>
<td>An identifier that is unique within a VNF descriptor.</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>accessInfo</strong></td>
<td>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 keyvalue pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 8259. In the following example, a list of key-value pairs with four keys (&quot;aString&quot;, &quot;aNumber&quot;, &quot;anArray&quot; and &quot;anObject&quot;) is provided to illustrate that the values associated with different keys can be of different type.</td>
<td>object</td>
</tr>
<tr>
<td><strong>extra</strong></td>
<td>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 keyvalue pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 8259. In the following example, a list of key-value pairs with four keys (&quot;aString&quot;, &quot;aNumber&quot;, &quot;anArray&quot; and &quot;anObject&quot;) is provided to illustrate that the values associated with different keys can be of different type.</td>
<td>object</td>
</tr>
<tr>
<td><strong>id</strong></td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td><strong>interfaceInfo</strong></td>
<td>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 keyvalue pairs is represented as an object. It shall comply with the provisions defined in clause 4 of IETF RFC 8259. In the following example, a list of key-value pairs with four keys (&quot;aString&quot;, &quot;aNumber&quot;, &quot;anArray&quot; and &quot;anObject&quot;) is provided to illustrate that the values associated with different keys can be of different type.</td>
<td>object</td>
</tr>
<tr>
<td><strong>vimId</strong></td>
<td>An identifier with the intention of being globally unique.</td>
<td>string</td>
</tr>
<tr>
<td><strong>vimType</strong></td>
<td>Discriminator for the different types of the VIM information. The value of this attribute determines the structure of the &quot;interfaceInfo&quot; and &quot;accessInfo&quot; attributes, based on the type of the VIM. The set of permitted values is expected to change over time as new types or versions of VIMs become available. The ETSI NFV registry of VIM-related information provides access to information about VimConnectionInfo definitions for various VIM types. The structure of the registry is defined in Annex C of SOL003.</td>
<td>string</td>
</tr>
</tbody>
</table>
### zoneGroups

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>zoneId</td>
<td>References of identifiers of &quot;ZoneInfo&quot; structures, each of which provides information about a resource zone that belongs to this group.</td>
<td><code>&lt; string &gt; array</code></td>
</tr>
</tbody>
</table>

### zones

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>An identifier that is unique within a limited local scope other than above listed identifiers, such as within a complex data structure or within a request-response pair. Representation: string of variable length.</td>
<td><code>string</code></td>
</tr>
<tr>
<td>resourceProviderId</td>
<td>An identifier with the intention of being globally unique.</td>
<td><code>string</code></td>
</tr>
<tr>
<td>vimConnectionId</td>
<td>An identifier with the intention of being globally unique.</td>
<td><code>string</code></td>
</tr>
<tr>
<td>zoneId</td>
<td>An identifier with the intention of being globally unique.</td>
<td><code>string</code></td>
</tr>
</tbody>
</table>

### Response 400

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td><code>string</code></td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td><code>string (URI)</code></td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td><code>integer</code></td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

**Response 401**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td><strong>type</strong></td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

**Response 403**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>detail</strong></td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td><strong>instance</strong></td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td><strong>status</strong></td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td><strong>title</strong></td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td><strong>type</strong></td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
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</table>

**Response 404**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>detail</strong></td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
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</table>

**Response 405**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
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Response 406

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
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</tbody>
</table>

**Response 422**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td>status</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td>title</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

**Response 500**

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

Response 503

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td>required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>instance</td>
<td>A URI reference that identifies the specific occurrence of the problem. It</td>
<td>string</td>
</tr>
<tr>
<td>optional</td>
<td>may yield further information if dereferenced.</td>
<td></td>
</tr>
<tr>
<td>status</td>
<td>The HTTP status code for this occurrence of the problem. The HTTP status</td>
<td>integer</td>
</tr>
<tr>
<td>required</td>
<td>code ([RFC7231], Section 6) generated by the origin server for this</td>
<td></td>
</tr>
<tr>
<td></td>
<td>occurrence of the problem.</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td><strong>title</strong> &lt;br/&gt;optional</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td><strong>type</strong> &lt;br/&gt;optional</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>

**Response 504**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>detail</strong> &lt;br/&gt;required</td>
<td>A human-readable explanation specific to this occurrence of the problem.</td>
<td>string</td>
</tr>
<tr>
<td><strong>instance</strong> &lt;br/&gt;optional</td>
<td>A URI reference that identifies the specific occurrence of the problem. It may yield further information if dereferenced.</td>
<td>string (URI)</td>
</tr>
<tr>
<td><strong>status</strong> &lt;br/&gt;required</td>
<td>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.</td>
<td>integer</td>
</tr>
<tr>
<td><strong>title</strong> &lt;br/&gt;optional</td>
<td>A 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 &quot;about:blank&quot;, 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).</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Schema</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>type</td>
<td>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 &quot;about:blank&quot;.</td>
<td>string (URI)</td>
</tr>
</tbody>
</table>