**3GPP TSG-CT WG4 Meeting #99eC4-204253**

**E-Meeting, 18th – 28th August 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **29.500** | **CR** | **0159** | **rev** | **1** | **Current version:** | **16.4.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | API Root Change Handling | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_eSBA | | | | |  | ***Date:*** | | | 2020-08-24 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) Rel-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | When an NF as HTTP client sends a request via SCP for indirect communication, if the target NF as HTTP server is detected unavailable, the SCP may perform selection to another target NF to route the request.  If the HTTP response from the new selected NF does not contain a "location" header (e.g. for subsequent service requests after resource created), the apiRoot of the new NF instance cannot be passed to HTTP client. Hence, the NF as HTTP client will continue using the original API Root for further request, which leads to unnecessary re-selection and risks for redundant instances of the resource in the network. | | | | | | | | |
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| ***Summary of change:*** | | Clarify that the SCP shall include target API Root in the response to the HTTP client, if location header is not included in the response.  The HTTP client when received new target API Root shall update the stored context and use new target API Root for subsequent request towards the same target. | | | | | | | | |
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| ***Consequences if not approved:*** | | Unnecessary re-selection and Risks for redundant instances of the resources in core network. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.3.2.1, 5.2.3.2.4, 6.10.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev1:  Refine descriptions for better readability | | | | | | | | |

\* \* \* First Change \* \* \* \*

##### 5.2.3.2.1 General

The 3GPP NF Services shall support the HTTP custom headers specified in Table 5.2.3.2.1-1 below. A description of each custom header and the normative requirements on when to include them are also provided in Table 5.2.3.2-1.

Table 5.2.3.2.1-1: Mandatory HTTP custom headers

|  |  |  |
| --- | --- | --- |
| Name | Reference | Description |
| 3gpp-Sbi-Message-Priority | Clause 5.2.3.2.2 | This header is used to specify the HTTP/2 message priority for 3GPP service based interfaces. This header shall be included in HTTP/2 messages when a priority for the message needs to be conveyed (e.g HTTP/2 messages related to Multimedia Priority Sessions). |
| 3gpp-Sbi-Callback | Clause 5.2.3.2.3 | This header is used to indicate if a HTTP/2 message is a callback (e.g notification).  This header shall be included in HTTP POST messages for callbacks towards NF service consumer(s) in another PLMN via the SEPP (See 3GPP TS 29.573 [27]).  This header shall also be included in HTTP POST messages for callbacks in indirect communication (See clause 6.10.7). |
| 3gpp-Sbi-Target-apiRoot | Clause 5.2.3.2.4 | This header is used by an HTTP client to indicate the apiRoot of the target URI when communicating indirectly with the HTTP server via an SCP. This header is also used by SCP to indicate the apiRoot of the target URI, if a new HTTP server is selected or reselected and there is no Location header included in the response.  This header may also be used by an HTTP client to indicate the apiRoot of the target URI towards HTTP server in another PLMN via the SEPP, when TLS is used between the SEPPs. |
| 3gpp-Sbi-Routing-Binding | Clause 5.2.3.2.5 | This header is used in a service request to signal binding information to direct the service request to an HTTP server which has the targeted NF Service Resource context (see clause 6.12). |
| 3gpp-Sbi-Binding | Clause 5.2.3.2.6 | This header is used to signal binding information related to an NF Service Resource to a future consumer (HTTP client) of that resource (see clause 6.12). |
| 3gpp-Sbi-Discovery-\* | Clause 5.2.3.2.7 | Headers beginning with the prefix 3gpp-Sbi-Discovery- are used in indirect communication mode for discovery and selection of a suitable producer by the SCP. Such headers may be included in any SBI message and include information allowing an SCP to find a suitable producer as per the consumer's included delegated discovery parameters. |
| 3gpp-Sbi-Producer-Id | Clause 5.2.3.2.8 | This header is used in a service response from the SCP to the NF Service Consumer, when using indirect communication with delegated discovery and the NF Service Producer does not return a binding indication in a service response creating a resource. See clause 6.10.3.4. |
| 3gpp-Sbi-Oci | Clause 5.2.3.2.9 | This header may be used by an overloaded NF Service Producer in a service response, or in a notification request to signal Overload Control Information (OCI) to the NF Service Consumer.  This header may also be used by an overloaded NF Service Consumer in a notification response or in a service request to signal Overload Control Information (OCI) to the NF Service Producer. |
| 3gpp-Sbi-Lci | Clause 5.2.3.2.10 | This header may be used by a NF Service Producer to send Load Control Information (LCI) to the NF Service Consumer. |
| 3gpp-Sbi-Client-Credentials | Clause 5.2.3.2.11 | This header may be used by an NF Service Consumer to send Client Credentials Assertion to the NRF or to the NF Service Producer. See clause 6.7.5. |

\* \* \* Next Change \* \* \* \*

##### 5.2.3.2.4 3gpp-Sbi-Target-apiRoot

The header contains the apiRoot of the target URI (see clause 4.4 of 3GPP TS 29.501 [5]) in a request sent to an SCP when using Indirect Communication. This header contains the apiRoot of the selected or changed target URI in a response sent to an HTTP client, when SCP selected or reselected a new HTTP server to route the request and no Location HTTP header is included in the HTTP response. It may also be used in a request sent to a SEPP (see clause 6.1.4.3.2).

The encoding of the header follows the ABNF as defined in IETF RFC 7230 [12].

3gpp-Sbi-Target-apiRoot header field = "3gpp-Sbi-Target-apiRoot" ":" OWS scheme "://" authority [ prefix ]

scheme = "http" / "https"

authority = host [ ":" port ]

port = \*DIGIT

prefix = path-absolute ; path-absolute production rule from IETF RFC 3986 [14], clause 3.3

An example is: 3gpp-Sbi-Target-apiRoot: <https://example.com/a/b/c>

\* \* \* Next Change \* \* \* \*

### 6.10.4 Authority and/or deployment-specific string in apiRoot of resource URI

For Indirect Communications with or without delegated discovery, the SCP may select or reselect the specific NF (service) instance towards which to send a request.

NOTE 1: For Indirect Communications without delegated discovery, the SCP selects for instance a specific (service) instance within a NF (Service) Set that was selected by the NF Service Consumer.

Consequently, NF as HTTP client shall be capable to receive and process an authority and/or deployment-specific string in the apiRoot of the created or updated resource URI that differs from the authority and/or deployment-specific string of the apiRoot of the Request URI.

If the NF Service Producer includes a relative URI (see IETF RFC 3986 [14]) in the "Location" header of an HTTP response creating a resource, the SCP shall resolve the URI reference using the target URI included in the HTTP POST request sent to the NF Service Producer as base URI, and return an absolute URI in the "Location" header in the HTTP response sent to the NF Service consumer, unless the SCP did not change the target URI when forwarding the HTTP POST request from the NF Service Consumer to the NF Service Producer.

NOTE 2: The target URI can remain unchanged when forwarding an HTTP POST request from the NF Service Consumer to the NF Service Producer if indirect communication without delegated discovery and without TLS is used between the NF Service Consumer and the SCP, and the SCP uses the NF (service) instance of the NF Service Producer that is selected by the NF Service Consumer.

If the SCP changed the target URI when forwarding the request from the  HTTP client to  HTTP server and no "Location" header is included in the HTTP response (e.g. subsequent service request towards a created resource), the SCP shall include a "3gpp-Sbi-Target-apiRoot" header with value set to the apiRoot of the target HTTP server when forwarding the HTTP response to the NF as HTTP client.

NOTE 3: To avoid further reselection of HTTP server by SCP, the NF as HTTP client updates the locally stored URI (e.g. resource URI or notification callback URI) used in the request with the target apiRoot received in the HTTP response, and thus send subsequent request to the updated target URI.

\* \* \* End of Changes \* \* \* \*