**3GPP TSG-CT WG4 Meeting #102-eC4-211xyz**

**E-Meeting, 24th Feb – 5th Mar 2021 (was C4-211265)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.500** | **CR** | **0216** | **rev** | **1** | **Current version:** | **16.6.0** |  |
|  | | | | | | | | |
| *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:*** | ABNF Definition of 3GPP Custom Headers | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | SBIProtoc16 | | | | |  | ***Date:*** | | | 2021-02-15 |
|  |  | | | |  | |  | | |  |
| ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Several custom HTTP headers defined by 3GPP have defined their syntax using ABNF notation, and using common syntax components from RFC 7230 (e.g. token and tchar).  However, there are several characters that are not allowed as part of token or tchar, since they are reserved to be used as delimiters.  Therefore, the current custom header definition is incorrect for, at least, the following headers:  - 3gpp-Sbi-Routing-Binding  - 3gpp-Sbi-Binding  - 3gpp-Sbi-Oci  - 3gpp-Sbi-Lci  This results in the impossiblity to implement (in an inter-operable manner) the functionality associated to those headers. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Define in the general clause for the definition of 3GPP custom headers how to encode the characters not allowed for <token> or <tchar>; it is proposed to use percent-encoding. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The functionality that depends on the headers mentioned above cannot be implemented (eSBA and Load Control). | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.3.1, 5.2.3.2.7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

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

### 5.2.3 HTTP custom headers

#### 5.2.3.1 General

The list of custom HTTP headers applicable to 3GPP Service Based NFs are specified below.

The ABNF definition of these custom headers is expressed in the following clauses using common syntax components defined in IETF RFC 7230 [12], section 3.2.6, such as <token> and <tchar>. As indicated there, the following characters (expressed by their UNICODE name) shall not be used as part of a <token>, or as a <tchar>:

- QUOTATION MARK (U+0022): **"**

- LEFT PARENTHESIS (U+0028): **(**

- RIGHT PARENTHESIS (U+0029): **)**

- COMMA (U+002C): **,**

- SOLIDUS (U+002F): **/**

- COLON (U+003A): **:**

- SEMICOLON (U+003B): **;**

- LESS-THAN SIGN (U+003C): **<**

- EQUALS SIGN (U+003D): **=**

- GREATER-THAN SIGN (U+003E): **>**

- QUESTION MARK (U+003F): **?**

- COMMERCIAL AT (U+0040): **@**

- LEFT SQUARE BRACKET (U+005B): **[**

- REVERSE SOLIDUS (U+005C): **\**

- RIGHT SQUARE BRACKET (U+005D): **]**

- LEFT CURLY BRACKET (U+007B): **{**

- RIGHT CURLY BRACKET (U+007D): **}**

If a 3GPP custom HTTP header, whose ABNF syntax definition uses the <token> or <tchar> components, needs to include a value containing a character outside of the character set allowed for <token> or <tchar>, such character shall be encoded using percent-encoding, as follows:

pct-encoded = "%" HEXDIG HEXDIG

The HEXDIG ABNF production rule, originally defined in IETF RFC 5234 [43], shall be considered as if the uppercase hexadecimal digits 'A' through 'F' are equivalent to the lowercase digits 'a' through 'f', respectively.

The literal "%" character shall also be encoded as above (i.e. %25).

Percent encoding shall not be used for characters that are in the <token> or <tchar> allowed character set.

EXAMPLE: 3GPP Custom Header "3gpp-Sbi-Oci" (see clause 5.2.3.2.9) can include an optional parameter "snssai". If this parameter takes the value:  
  
{"sst":1,"sd":"A08923"}  
  
it will be formatted, when included in this custom header, as:  
  
S-NSSAI: %7B%22sst%22%3A1%2C%22sd%22%3A%22A08923%22%7D

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

##### 5.2.3.2.7 3gpp-Sbi-Discovery

These headers shall be used to convey NF service discovery factors to the SCP in indirect communication models. They contain discovery parameters to be conveyed by an NF service consumer or an NF service producer to the SCP or by an SCP to the next hop SCP and they shall be used by the SCP to select or reselect a suitable NF service producer instance to create or update a (existing) resource context, or a suitable NF service consumer instance towards which to send a notification or a callback request, e.g. by performing the NF service discovery procedure with the NRF on behalf of the NF consumer in case of indirect communication with delegated discovery model.

The name of each NF service discovery factors header shall be constructed by concatenating the string "3gpp-Sbi-Discovery-" with the name of the conveyed discovery parameter, i.e. "3gpp-Sbi-Discovery-<discovery parameter>".

The discovery headers shall be used to include any of the discovery query parameters listed in 3GPP TS 29.510 [8], Table 6.2.3.2.3.1-1. The value of each NF service discovery header shall be encoded in the same way as the corresponding discovery parameter (i.e. with the same data type and cardinality). Thus, the values of these headers may be validated with the same data model as that of the corresponding discovery parameters. The discovery headers shall comply with the condition of presence of the discovery parameters defined in Table 6.2.3.2.3.1-1 of 3GPP TS 29.510 [8], e.g. discovery headers shall be included for discovery parameters defined as mandatory in this table. Table 5.2.3.2.7-1 lists examples of NF service discovery headers.

Table 5.2.3.2.7-1: NF service discovery factors headers examples

|  |  |  |  |
| --- | --- | --- | --- |
| Header in request | Discovery parameter | Header value | Data Model |
| 3gpp-Sbi-Discovery-target-nf-type: AMF | target-nf-type (TS 29.510 [8], Table 6.2.3.2.3.1-1) | AMF | NFType: Enumeration as of TS 29.510 [8], Table 6.1.6.3.3-1. |
| 3gpp-Sbi-Discovery-snssais: [{"sst": 1, "sd": "A08923"}, {"sst": 1, "sd": "0023F1"}] | snssais (TS 29.510 [8], Table 6.2.3.2.3.1-1) | [{"sst": 1, "sd": "A08923"}, {"sst": 1, "sd": "0023F1"}] | array(Snssai), where Snssai is a structured data type as of TS 29.571 [13], Table 5.4.4.2-1 |
| 3gpp-Sbi-Discovery-target-nf-instance-id: e553cf50-f32b-4638-8a7e-0d416cc60952 | target-nf-instance-id (TS 29.510 [8], Table 6.2.3.2.3.1-1) | e553cf50-f32b-4638-8a7e-0d416cc60952 | NfInstanceId: simple data type as of TS 29.571 [13], Table 5.3.2-1 |

The 3gpp-Sbi-Discovery-\* header is not documented in OpenAPI specification files. It shall comply with the following OpenAPI definition:

parameters:

- name: 3gpp-Sbi-Discovery-<Discovery parameter name>:

in: header

description: Discovery parameter defined in Table 6.2.3.2.3.1-1 of 3GPP TS 29.510

schema:

type: <Data type defined in Table 6.2.3.2.3.1-1 of 3GPP TS 29.510>

NOTE: The percent-encoding described in clause 5.2.3.1 is not applicable to the 3gpp-Sbi-Discovery-\* headers since their syntax is not defined using ABNF; such encoding is only applicable to headers whose ABNF syntax is defined in terms of <token> and <tchar> common components.

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