**3GPP TSG-CT WG4 Meeting #106-eC4-215xyz**

**E-Meeting, 11th – 15th October 2021 (was C4-215328)**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **29.500** | **CR** | **0286** | **rev** | **1** | **Current version:** | **17.4.0** |  |
|  |
| *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:***  | Invalid characters in headers using "tchar" common component in ABNF syntax |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | CT4 |
|  |  |
| ***Work item code:*** | SBIProtoc17 |  | ***Date:*** | 2021-09-20 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-17 |
|  | *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 canbe 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:*** | As indicated in clause 5.2.3.1, if the definition of the syntax of an HTTP header is based on the tchar common component in the ABNF syntax, there are certain characters that cannot be used, and must be formatted with a percent-encoding. |
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| ***Summary of change:*** | Correct examples 3, 4 and 6, where the S-NSSAI examples are not properly formatted. |
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| ***Consequences if not approved:*** | The examples are incorrect and may mislead implementors of the specification. |
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| ***Clauses affected:*** | 5.2.3.2.10 |
|  |  |
|  | **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 \* \* \* \*

##### 5.2.3.2.10 3gpp-Sbi-Lci

The header contains a comma-delimited list (see IETF RFC 7230 [12]) of Load Control Information (LCI). See clause 6.3.3.

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

3gpp-Sbi-Lci = "3gpp-Sbi-Lci:" 1#(RWS timestamp ";" RWS lcMetric ";" RWS lcScope)

timestamp = "Timestamp:" RWS DQUOTE date-time DQUOTE

Mandatory parameter. The date-time type is specified in IETF RFC 5322 [37] and clause 7.1.1.1 of IETF RFC 7231 [11]. It indicates the timestamp associated with the load control information.

lcMetric = "Load-Metric:" RWS (DIGIT / %x31-39 DIGIT / "100") "%"

Mandatory parameter. Load-Metric is up to 3 digits long decimal string and the value range shall be from 0 to 100.

lcScope = nfProducerScope / scpScope / seppScope

Mandatory structured parameter, which in the actual header is replaced by its sub-parameters.

nfProducerScope = (("NF-Instance:" RWS nfinst)
/ ("NF-Set:" RWS nfset)
/ "(NF-Service-Instance:" RWS nfservinst)
/ ("NF-Service-Set:" RWS nfserviceset)) [; RWS sNssai ";" RWS dnn; RWS relativeCapacity]

scpScope = ("SCP-FQDN:" RWS fqdn)

seppScope = ("SEPP-FQDN:" RWS fqdn)

See clause 6.3.3.4.4. The nfinst, nfset, nfservinst and nfserviceset parameters are defined in clause 5.2.3.2.5. fqdn shall encode an FQDN.

dnn = "DNN:" RWS 1\*tchar \*(RWS "&" RWS 1\*tchar)

Optional parameter used for S-NSSAI/DNN based load control by SMF, see clause 6.3.3.4.4.2.2, that refers to one or more specific DNN(s). DNN format is defined in 3GPP TS 23.003 [15].

sNssai= "S-NSSAI:" RWS snssai \*(RWS "&" RWS snssai)

Optional parameter used for S-NSSAI/DNN based load control by SMF, see clause 6.3.3.4.4.2.2, that refers to one or more specific S-NSSAI(s).

snssai = 1\*tchar

S-NSSAI format is defined in clause 5.4.4.2 of 3GPP TS 29.571 [13].

relativeCapacity = "Relative-Capacity:" RWS (1\*2DIGIT / "100") "%"

Optional parameter used for S-NSSAI/DNN based load control by SMF, see clause 6.3.3.4.5. Up to 3 digits long decimal string with value range from 0 to 100. The value applies to all combinations of S-NSSAIs and DNNs indicated in the LCI.

EXAMPLE 1: Load Control Information for an NF Instance:

3gpp-Sbi-Lci: Timestamp: "Tue, 04 Feb 2020 08:49:37 GMT"; Load-Metric: 25%; NF-Instance: 54804518-4191-46b3-955c-ac631f953ed8

EXAMPLE 2: Load Control Information for an NF Service Set:

3gpp-Sbi-Lci: Timestamp: "Tue, 04 Feb 2020 08:49:37 GMT"; Load-Metric: 25%; NF-Service-Set : setxyz.snnsmf-pdusession.nfi54804518-4191-46b3-955c-ac631f953ed8.5gc.mnc012.mcc345

EXAMPLE 3: Load Control Information for an SMF instance related to a particular DNN of an S-NSSAI (SST=1, SD="A08923"):

3gpp-Sbi-Lci: Timestamp: "Tue, 04 Feb 2020 08:49:37 GMT"; Load-Metric: 25%; NF-Instance: 54804518-4191-46b3-955c-ac631f953ed8; S-Nssai: %7B%22sst%22%3A 1%2C %22sd%22%3A %22A08923%22%7D; DNN: internet.mnc012.mcc345.gprs; Relative-Capacity: 20%

NOTE: The S-Nssai parameter corresponds to the JSON encoding: {"sst": 1, "sd": "A08923"} (see clause 5.2.3.1)

EXAMPLE 4: Load Control Information for an SMF instance related to a particular S-NSSAI (SST=1, SD="A08923"):

3gpp-Sbi-Lci: Timestamp: "Tue, 04 Feb 2020 08:49:37 GMT"; Load-Metric: 25%; NF-Instance: 54804518-4191-46b3-955c-ac631f953ed8; S-Nssai: %7B%22sst%22%3A 1%2C %22sd%22%3A %22A08923%22%7D & %7B%22sst%22%3A 1%2C %22sd%22%3A %22A08924%22%7D; DNN: internet.mnc012.mcc345.gprs; Relative-Capacity: 20%

NOTE: The S-Nssai parameter corresponds to the JSON encoding: {"sst": 1, "sd": "A08923"} (see clause 5.2.3.1)

EXAMPLE 5: Load Control Information for SCP:

3gpp-Sbi-Lci: Timestamp: "Tue, 04 Feb 2020 08:49:37 GMT"; Load-Metric: 25%; SCP-FQDN: scp1.example.com

EXAMPLE 6: Example with two LCI values, for different DNNs of a same S-NSSAI (SST=1, SD="A08923"):

3gpp-Sbi-Lci: Timestamp: "Tue, 04 Feb 2020 08:49:37 GMT"; Load-Metric: 40%; NF-Instance=54804518-4191-46b3-955c-ac631f953ed8; S-Nssai: %7B%22sst%22%3A 1%2C %22sd%22%3A %22A08923%22%7D; DNN: internet.mnc012.mcc345.gprs; Relative-Capacity: 30%
3gpp-Sbi-Lci: Timestamp: "Tue, 04 Feb 2020 08:49:37 GMT"; Load-Metric: 70%; NF-Instance=54804518-4191-46b3-955c-ac631f953ed8; S-Nssai: %7B%22sst%22%3A 1%2C %22sd%22%3A %22A08923%22%7D; DNN: ciot.mnc012.mcc345.gprs; Relative-Capacity: 20%

NOTE: The S-Nssai parameter corresponds to the JSON encoding: {"sst": 1, "sd": "A08923"} (see clause 5.2.3.1)

EXAMPLE 7: Load Control Information for SEPP:

3gpp-Sbi-Lci: Timestamp: "Tue, 04 Apr 2021 08:36:42 GMT"; Load-Metric: 25%; SEPP-FQDN: sepp1.example.com

NOTE: Example 6 is formatted as two distinct headers (which improves the readability), but it can also be formatted as a single header with two LCI values separated by a comma.

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