**3GPP TSG-CT WG4 Meeting #111-eC4-224420**

**E-Meeting, 18th – 26th August 2022** *Revision of C4-224077*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.500** | **CR** | **0338** | **rev** | **1** | **Current version:** | **17.7.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Escaping SPACE character | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | SBIProtoc17 | | | | |  | ***Date:*** | | | 2022-07-26 |
|  |  | | | |  | |  | | |  |
| ***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 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Handling of the SPACE (ASCII value U+0020) character is ambiguous and also inconsistent. Clause 5.2.10.2 specifies that SPACE (U+0020) character may be escaped by replacing it with character PLUS SIGN (ASCII value U+002B), while clause 5.2.10.3 mandates that.  Clause 5.2.10.2 mandates PLUS SIGN shall be percent-encoded (%2b), while clause 5.2.10.3 makes this optional.  Replacing SPACE (U+0020) with PLUS SIGN (U+002B) and sending this over the wire with or without percent encoding it will create an ambiguity at the receiving HTTP entity. The receiver has no way to guess which these were originally PLUS and which were SPACE. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | In an URI component or in a HTTP/2 request body with media type "application/x-www-form-urlencoded", the SPACE (ASCII value U+0020) character shall be escaped by percent-encoding it (%20). | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Upper layer receives wrong URI, which will cause severe misoperations. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.10.2, 5.2.10.3. | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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: All proposed changes are removed and replaced with informative notes. Cover sheet is updated. | | | | | | | | |

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

#### 5.2.10.2 URL Encoding of URI components

When a URI is composed in the 3GPP 5G APIs, the different components (e.g., path segments, values of query parameters, etc.) shall percent-encode (see IETF RFC 3986 [14], section 2.1) the following "reserved" characters:

- EXCLAMATION MARK (U+0021): **!**

- NUMBER SIGN (U+0023): #

- DOLLAR SIGN (U+0024): $

- AMPERSAND (U+0026): &

- APOSTROPHE (U+0027): '

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

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

- ASTERISK (U+002A): \*

- PLUS SIGN (U+002B): +

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

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

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

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

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

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

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

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

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

The following characters (not listed as "reserved" in IETF RFC 3986 [14]) shall be percent-encoded:

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

- PERCENT SIGN (U+0025): %

SPACE (U+0020) character shall be escaped, either by percent-encoding it (as %20), or by replacing it with character PLUS SIGN (U+002B).

NOTE: If SPACE (U+0020) character is escaped by replacing it with the PLUS SIGN (U+002B) character, there is no ambiguity, because the PLUS SIGN (U+002B) in the same string will be percent-encoded.

The encoding of query parameters consisting of arrays of strings shall follow the guidelines indicated in 3GPP TS 29.501 [5], clause 5.3.13, for the escaping of the COMMA (U+002C) characters.

In addition, implementations may percent-encode other characters, such as:

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

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

\* \* \* 2nd Change \* \* \* \*

#### 5.2.10.3 URL Encoding of HTTP/2 request bodies

When composing an HTTP/2 request body with media type "application/x-www-form-urlencoded", the OpenAPI Specification [9] requires that the encoding shall follow IETF RFC 1866 [48], section 8.2.1, which indicates:

a) the "reserved" character set described in IETF RFC 1738 [yy], section 2.2, shall be percent-encoded:

- AMPERSAND (U+0026): &

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

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

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

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

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

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

b) SPACE (U+0020) character shall be escaped by replacing it with character PLUS SIGN (U+002B).

NOTE: If SPACE (U+0020) character is escaped by replacing it with the PLUS SIGN (U+002B) character, there is no ambiguity, because the PLUS SIGN (U+002B) in the same string will be percent-encoded.

The following characters (not listed as "reserved" in IETF RFC 1738 [yy]) shall be percent-encoded:

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

- PERCENT SIGN (U+0025): %

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

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

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

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

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

In addition, implementations may also percent-encode any of the characters listed in clause 5.2.10.2.

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