**3GPP TSG-CT WG1 Meeting #131-eC1-21xxxx**

**E-meeting, 19-27 August 2021 (was C1-214396)**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.539** | **CR** | **0003** | **rev** | **1** | **Current version:** | **17.1.0** |  |
|  | | | | | | | | |
| *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:*** | Introducing new service cause values for port/user plane node parameter unavailable | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorporated | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | IIoT | | | | |  | ***Date:*** | | | 2021-08-19 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **C** |  | | | | | ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | There can be scenarios where some of the port management information becomes available in the DS-TT/NW-TT only after some time following PDU session activation, for instance txPropagationDelay will only be available after the DS-TT/NW-TT has started measuring the propagation delay to its next hop neighbor (which a DS-TT/NW-TT may choose to only start after PDU Session establishment).  Similarly, there can be scenarios where some of the user plane node management information becomes available in the NW-TT only after some time following PDU session activation, for instance the discovered neighbor information for DS-TT ports will only be available after the NW-TT has discovered the neighbor of DS-TT port with LLDP.  If the TSN AF requests to read the value of such port parameter or user plane node parameters too early, the DS-TT/NW-TT will be unable to provide a value and will need to respond with a service cause, however the service cause values currently specified in TS 24.539 only map to permanent errors (e.g. “Port parameter not supported”).  It is thus proposed to introduce new service causes for port/user plane node parameter unavailable. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | * One code point of the port management service cause was allocated for “Port parameter value unavailable” * One code point of the user plane node management service cause was allocated for “User plane node parameter value unavailable” | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The TSN-AF will not be able to distinguish between the case when the value of a port parameter or user plane node parameter cannot be read due to a permanent error, and the case when the value of a port parameter or user plane node parameter is not yet available | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 9.4, 9.5D | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \*\*\*

## 9.4 Port status

The purpose of the port status information element is to report the values of port parameters of the DS-TT or NW-TT to the TSN AF.

The port status information element is coded as shown in figure 9.4.1, figure 9.4.2, figure 9.4.3, figure 9.4.4, figure 9.4.5, and table 9.4.1.

The port status information element has a minimum length of 5 octets and a maximum length of 65534 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Port status IEI | | | | | | | | octet 1 |
| Length of port status and error contents | | | | | | | | octet 2  octet 3 |
| Port status contents | | | | | | | | octet 4  octet a |
| Port error contents | | | | | | | | octet a+1  octet z |

Figure 9.4.1: Port status information element

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Number of port parameters successfully read | | | | | | | | octet 4 |
| port parameter status 1 | | | | | | | | octet 5\*  octet b\* |
| port parameter status 2 | | | | | | | | octet b+1\*  octet c\* |
| … | | | | | | | | octet c+1\*  …  octet d\* |
| port parameter status N | | | | | | | | octet d+1\*  octet a\* |

Figure 9.4.2: Port status contents

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Port parameter name | | | | | | | | octet e  octet e+1 |
| Length of port parameter value | | | | | | | | octet e+2  octet e+3 |
| Port parameter value | | | | | | | | octet e+4  octet f |

Figure 9.4.3: Port parameter status

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Number of port parameters not successfully read | | | | | | | | octet a+1 |
| Port parameter error 1 | | | | | | | | octet a+2\*  octet a+3\* |
| Port parameter error 2 | | | | | | | | octet a+4\*  octet a+5\* |
| … | | | | | | | | octet a+6\*  …  octet z-2\* |
| Port parameter error N | | | | | | | | octet z-1\*  octet z\* |

Figure 9.4.4: port error contents

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Port parameter name | | | | | | | | octet i  octet i+1 |
| Port management service cause | | | | | | | | octet i+2 |

Figure 9.4.5: Port parameter error

Table 9.4.1: Port status information element

|  |
| --- |
| Value part of the port status information element (octets 4 to z) |
|  |
| Port status contents (octets 4 to a)  This field consists of zero or several port parameter statuses.  Port parameter status  Port parameter name (octets e to e+1) |
|  |
| This field contains the name of the port parameter which could be read successfully, encoded over 2 octets as specified in table 9.2.1 for the DS-TT or NW-TT to TSN AF direction. |
| Length of port parameter value (octets e+2 to e+3) |
|  |
| This field contains the binary encoding of the length of the port parameter value |
|  |
| Port parameter value (octets e+4 to f) |
|  |
| This field contains the value for the port parameter, encoded as specified in table 9.2.1. |
| Port error contents (octets a+1 to z)  This field consists of zero or several port parameter errors.  Port parameter error  Port parameter name (octets i to i+1) |
|  |
| This field contains the name of the port parameter whose value could not be read successfully, encoded over 2 octets as specified in table 9.2.1 for the DS-TT or NW-TT to TSN AF direction. |
| Port management service cause (octet i+2)  This field contains the port management service cause indicating the reason why the value of the port parameter could not be read successfully, encoded as follows:  Bits  **8 7 6 5 4 3 2 1**  0 0 0 0 0 0 0 0 Reserved  0 0 0 0 0 0 0 1 Port parameter not supported  0 0 0 0 0 0 1 0 Invalid port parameter value  0 0 0 0 0 0 1 1 Port parameter value unavailable  0 1 1 0 1 1 1 1 Protocol error, unspecified  The receiving entity shall treat any other value as 0110 1111, "protocol error, unspecified". |

\*\*\* Next change \*\*\*

## 9.5D User plane node status

The purpose of the User plane node status information element is to report the values of User plane node parameters of the NW-TT to the TSN AF.

The User plane node status information element is coded as shown in figure 9.5D.1, figure 9.5D.2, figure 9.5D.3, figure 9.5D.4, figure 9.5D.5, and table 9.5D.1.

The User plane node status information element has a minimum length of 5 octets and a maximum length of 65530 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| User plane mode status IEI | | | | | | | | octet 1 |
| Length of User plane node status and error contents | | | | | | | | octet 2  octet 3 |
| User plane node status contents | | | | | | | | octet 4  octet a |
| User plane node error contents | | | | | | | | octet a+1  octet z |

Figure 9.5D.1: User plane node status information element

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Number of User plane node parameters successfully read | | | | | | | | octet 4 |
| User plane node parameter status 1 | | | | | | | | octet 5\*  octet b\* |
| User plane node parameter status 2 | | | | | | | | octet b+1\*  octet c\* |
| … | | | | | | | | octet c+1\*  …  octet d\* |
| User plane node parameter status N | | | | | | | | octet d+1\*  octet a\* |

Figure 9.5D.2: User plane node status contents

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| User plane node parameter name | | | | | | | | octet e  octet e+1 |
| Length of User plane node parameter value | | | | | | | | octet e+2  octet e+3 |
| User plane node parameter value | | | | | | | | octet e+4  octet f |

Figure 9.5D.3: User plane node parameter status

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Number of User plane node parameters not successfully read | | | | | | | | octet a+1 |
| User plane node parameter error 1 | | | | | | | | octet a+2\*  octet a+3\* |
| User plane node parameter error 2 | | | | | | | | octet a+4\*  octet a+5\* |
| … | | | | | | | | octet a+6\*  …  octet z-2\* |
| User plane node parameter error N | | | | | | | | octet z-1\*  octet z\* |

Figure 9.5D.4: User plane node error contents

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| User plane node parameter name | | | | | | | | octet i  octet i+1 |
| User plane node management service cause | | | | | | | | octet i+2 |

Figure 9.5D.5: User plane node parameter error

Table 9.5D.1: User plane node status information element

|  |
| --- |
| Value part of the User plane node status information element (octets 4 to z) |
|  |
| User plane node status contents (octets 4 to a)  This field consists of zero or several User plane node parameter statuses.  User plane node parameter status  User plane node parameter name (octets e to e+1) |
|  |
| This field contains the name of the User plane node parameter which could be read successfully, encoded over 2 octets as specified in table 9.2.1 for the NW-TT to TSN AF direction. |
| Length of User plane node parameter value (octets e+2 to e+3) |
|  |
| This field contains the binary encoding of the length of the User plane node parameter value |
|  |
| User plane node parameter value (octets e+4 to f) |
|  |
| This field contains the value for the User plane node parameter, encoded as specified in table 9.2.1. |
| User plane node error contents (octets a+1 to z)  This field consists of zero or several User plane node parameter errors.  User plane node parameter error  User plane node parameter name (octets i to i+1) |
|  |
| This field contains the name of the User plane node parameter whose value could not be read successfully, encoded over 2 octets as specified in table 9.2.1 for the NW-TT to TSN AF direction. |
| User plane node management service cause (octet i+2)  This field contains the User plane node management service cause indicating the reason why the value of the User plane node parameter could not be read successfully, encoded as follows:  Bits  **8 7 6 5 4 3 2 1**  0 0 0 0 0 0 0 0 Reserved  0 0 0 0 0 0 0 1 User plane node parameter not supported  0 0 0 0 0 0 1 0 Invalid User plane node parameter value  0 0 0 0 0 0 1 1 User plane node parameter value unavailable  0 1 1 0 1 1 1 1 Protocol error, unspecified  The receiving entity shall treat any other value as 0110 1111, "protocol error, unspecified". |

\*\*\* End of changes \*\*\*