**3GPP TSG-CT WG1 Meeting #133-eC1-21xxxx**

**E-meeting, 11-19 November 2021 (was C1-216749)**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.539** | **CR** | **0009** | **rev** | **1** | **Current version:** | **17.2.0** |  |
|  | | | | | | | | |
| *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 | **X** | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Addition of txPropagationDelayDeltaThreshold and TSN time domain number to port management information | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorporated, Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | Vertical\_LAN | | | | |  | ***Date:*** | | | 11/12/2021 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **A** |  | | | | | ***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:*** | | At SA2#146-e, SA2 agreed CR 3204 to TS 23.501 (S2-2106826) adding new parameters txPropagationDelayDeltaThreshold and TSN time domain number to the port management information. The CR was approved at SA#93-e.  The stage 3 in TS 24.539 needs to be updated accordingly. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | txPropagationDelayDeltaThreshold and TSN time domain number were added to the port parameters.  Backward compatibility analysis:  The CR is backward compatible: if a TSN AF supporting the new parameters tries to use them with a TT not supporting the new parameters, the TT will respond with service cause "Protocol error, unspecified". | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | It will not be possible for the TSN AF to signal the txPropagationDelayDeltaThreshold and TSN time domain number to the DS-TT and NW-TT. The stage 3 will remain misaligned with the stage 2. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 9.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \*\*\*

## 9.2 Port management list

The purpose of the port management list information element is to transfer from the TSN AF to the DS-TT or NW-TT a list of operations related to port management of the DS-TT or NW-TT to be performed at the DS-TT or NW-TT.

The port management list information element is coded as shown in figure 9.2.1, figure 9.2.2, figure 9.2.3, figure 9.2.4, figure 9.2.5, and table 9.2.1.

The port management list information element has a minimum length of 4 octets and a maximum length of 65535 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Port management list IEI | | | | | | | | octet 1 |
| Length of port management list contents | | | | | | | | octet 2  octet 3 |
| Port management list contents | | | | | | | | octet 4  octet z |

Figure 9.2.1: Port management list information element

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Operation 1 | | | | | | | | octet 4  octet a |
| Operation 2 | | | | | | | | octet a+1\*  octet b\* |
| … | | | | | | | | octet b+1\*  …  octet c\* |
| Operation N | | | | | | | | octet c+1\*  octet z\* |

Figure 9.2.2: Port management list contents

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Operation code | | | | | | | | octet d |

Figure 9.2.3: Operation for operation code set to "00000001"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Operation code | | | | | | | | octet d |
| Port parameter name | | | | | | | | octet d+1  octet d+2 |

Figure 9.2.4: Operation for operation code set to "00000010", "00000100", or "00000101"

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

Figure 9.2.5: Operation for operation code set to "00000011"

Table 9.2.1: Port management list information element

|  |
| --- |
| Value part of the port management list information element (octets 4 to z) |
|  |
| The value part of the port management list information element consists of one or several operations. |
|  |
| Operation |
|  |
| Operation code (octet d) |
| 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 Get capabilities  0 0 0 0 0 0 1 0 Read parameter  0 0 0 0 0 0 1 1 Set parameter (NOTE)  0 0 0 0 0 1 0 0 Subscribe-notify for parameter |
| 0 0 0 0 0 1 0 1 Unsubscribe for parameter |
| All other values are spare. |
|  |
| Port parameter name (octets d+1 to d+2) |
|  |
| This field contains the name of the port parameter to which the operation applies, encoded as follows:  - 0000H Reserved;  - 0001H txPropagationDelay;  - 0002H Traffic class table;  - 0003H GateEnabled;  - 0004H AdminBaseTime;  - 0005H AdminControlListLength;  - 0006H AdminControlList;  - 0007H AdminCycleTime;  - 0008H Tick granularity;  - 0009H txPropagationDelayDeltaThreshold  - 000AH  to Spare  - 003FH  - 0040H lldpV2PortConfigAdminStatusV2;  - 0041H lldpV2LocChassisIdSubtype;  - 0042H lldpV2LocChassisId;  - 0043H lldpV2MessageTxInterval;  - 0044H lldpV2MessageTxHoldMultiplier;  - 0045H  to Spare  - 005FH  - 0060H lldpV2LocPortIdSubtype;  - 0061H lldpV2LocPortId;  - 0062H  to Spare  - 009FH  - 00A0H lldpV2RemChassisIdSubtype;  - 00A1H lldpV2RemChassisId;  - 00A2H lldpV2RemPortIdSubtype;  - 00A3H lldpV2RemPortId;  - 00A4H lldpTTL;  - 00A5H  to Spare  - 00CFH  - 00D0H PSFPMaxStreamFilterInstances;  - 00D1H PSFPMaxStreamGateInstances;  - 00D2H PSFPMaxFlowMeterInstances;  - 00D3H PSFPSupportedListMax;  - 00D4H TSN time domain number;  - 00D5H  to Spare  - 00DFH  - 00E0H Stream filter instance table  - 00E1H Stream gate instance table  - 00E2H Supported PTP instance types  - 00E3H Supported transport types  - 00E4H Supported delay mechanisms  - 00E5H PTP grandmaster capable  - 00E6H gPTP grandmaster capable  - 00E7H Supported PTP profiles  - 00E8H Number of supported PTP instances  - 00E9H PTP instance list  - 00EAH  to Spare  - 7FFFH  - 8000H  to Reserved for deployment specific parameters  - FFFFH |
| Length of port parameter value (octets d+3 to d+4) |
|  |
| This field contains the binary encoding of the length of the port parameter value |
|  |
| Port parameter value (octet d+5 to e) |
|  |
| This field contains the value to be set for the port parameter.  When the port parameter name indicates txPropagationDelay, the port parameter value field contains the binary representation of the txPropagationDelay as defined in IEEE Std 802.1Qcc [9], expressed in unit of nanoseconds and multiplied by 216, with the LSB bit included in bit 1 of the first octet. If the txPropagationDelay is too big to be represented, all bits of the port parameter value field shall be coded as "1" except the MSB bit. The length of port parameter value indicates a value of 8.  When the port parameter name indicates Traffic class table, the port parameter value field contains the traffic class table as defined in IEEE Std 802.1Q [7], encoded as the value part of the Traffic class information element as specified in clause 9.7.  When the port parameter name indicates GateEnabled, the port parameter value field contains the value of GateEnabled as defined in IEEE Std 802.1Q [7], with a Boolean value of FALSE encoded as "00000000" and a Boolean value of TRUE encoded as "00000001". The length of port parameter value field indicates a value of 1.  When the port parameter name indicates AdminBaseTime, the port parameter value field contains the value of the administrative base time as specified in IEEE Std 802.1Q [7]. The length of port parameter value field indicates a value of 10.  When the port parameter name indicates AdminControlListLength, the port parameter value field contains the value of the AdminControlListLength as specified in IEEE Std 802.1Q [7]. The length of port parameter value field indicates a value of 2.  When the port parameter name indicates AdminControlList, the port parameter value field contains the concatenation of AdminControlListLength entries, each encoded as a GateControlEntry as specified in IEEE Std 802.1Q [7].  When the port parameter name indicates AdminCycleTime, the port parameter value field contains the value of the AdminCycleTime as specified in IEEE Std 802.1Q [7]. The length of port parameter value field indicates a value of 8.  When the port parameter name indicates Tick granularity, the port parameter value field contains the value of the Tick granularity as specified in IEEE Std 802.1Q [7]. The length of port parameter value field indicates a value of 4.  When the port parameter name indicates txPropagationDelayDeltaThreshold, the port parameter value field contains the binary representation of the txPropagationDelayDeltaThreshold as defined in 3GPP TS 23.501 [2] table 5.28.3.1-1, expressed in unit of nanoseconds and multiplied by 216, with the LSB bit included in bit 1 of the first octet. The length of port parameter value indicates a value of 8.  When the port parameter name indicates lldpV2PortConfigAdminStatusV2, the port parameter value field contains values of lldpV2PortConfigAdminStatusV2 as specified in IEEE Std 802.1AB [6] clause 9.2.5.1 with value of txOnly encoded as 01H, rxOnly encoded as 02H, txAndRx encoded as 03H, and disabled encoded as 04H. The length of port parameter value field indicates a value of 1.  When the port parameter name indicates lldpV2LocChassisIdSubtype, the port parameter value field contains values of lldpV2LocChassisIdSubtype as specified in IEEE Std 802.1AB [6] clause 8.5.2.2. The length of port parameter value field indicates a value of 1.  When the port parameter name indicates lldpV2LocChassisId, the port parameter value field contains values of lldpV2LocChassisId in the form of an octet string as specified in IEEE Std 802.1AB [6] clause 8.5.2.3. The length of port parameter value field indicates the length of the octet string with a maximum value of 255.  When the port parameter name indicates lldpV2MessageTxInterval, the port parameter value field contains the value of lldpV2MessageTxInterval as specified in IEEE Std 802.1AB [6] table 11-2. The length of port parameter value field indicates a value of 2.  When the port parameter name indicates lldpV2MessageTxHoldMultiplier, the port parameter value field contains the value of lldpV2MessageTxHoldMultiplier as specified in IEEE Std 802.1AB [6] table 11-2. The length of port parameter value field indicates a value of 1.  When the port parameter name indicates lldpV2LocPortIdSubtype, the port parameter value field contains values of lldpV2LocPortIdSubtype as specified in IEEE Std 802.1AB [6] clause 8.5.3.2. The length of port parameter value field indicates a value of 1.  When the port parameter name indicates lldpV2LocPortId, the port parameter value field contains values of lldpV2LocPortId in the form of an octet string as specified in IEEE Std 802.1AB [6] clause 8.5.3.3. The length of port parameter value field indicates the length of the octet string with a maximum value of 255.  When the port parameter name indicates lldpV2RemChassisIdSubtype, the port parameter value field contains values of lldpV2RemChassisIdSubtype as specified in IEEE Std 802.1AB [6] clause 8.5.2.2. The length of port parameter value field indicates a value of 1.  When the port parameter name indicates lldpV2RemChassisId, the port parameter value field contains values of lldpV2RemChassisId in the form of an octet string as specified in IEEE Std 802.1AB [6] clause 8.5.2.3. The length of port parameter value field indicates the length of the octet string with a maximum value of 255.  When the port parameter name indicates lldpV2RemPortIdSubtype, the port parameter value field contains values of lldpV2RemPortIdSubtype as specified in IEEE Std 802.1AB [6] clause 8.5.3.2. The length of port parameter value field indicates a value of 1.  When the port parameter name indicates lldpV2RemPortId, the port parameter value field contains values of lldpV2RemPortId in the form of an octet string as specified in IEEE Std 802.1AB [6] clause 8.5.3.3. The length of port parameter value field indicates the length of the octet string with a maximum value of 255.  When the port parameter name indicates lldpTTL, the port parameter value field contains the value of TTL as specified in IEEE Std 802.1AB [6] clause 8.5.4. The length of port parameter value field indicates a value of 2.  When the port parameter name indicates PSFPMaxStreamFilterInstances, the parameter value field contains the value of MaxStreamFilterInstances as specified in IEEE Std 802.1Q [7] clause 12.31.1.1. The length of port parameter value field indicates a value of 4.  When the port parameter name indicates PSFPMaxStreamGateInstances, the parameter value field contains the value of MaxStreamGateInstances as specified in IEEE Std 802.1Q [7] clause 12.31.1.2. The length of port parameter value field indicates a value of 4.  When the port parameter name indicates PSFPMaxFlowMeterInstances, the parameter value field contains the value of MaxFlowMeterInstances as specified in IEEE Std 802.1Q [7] clause 12.31.1.3. The length of port parameter value field indicates a value of 4.  When the port parameter name indicates PSFPSupportedListMax, the parameter value field contains the value of SupportedListMax as specified in IEEE Std 802.1Q [7] clause 12.31.1.4. The length of port parameter value field indicates a value of 4.  When the port parameter name indicates TSN time domain number, the port parameter value field contains the binary representation of the TSN time domain number as defined in 3GPP TS 23.501 [2] table 5.28.3.1-1. The length of port parameter value field indicates a value of 1.  When the port parameter name indicates Stream filter instance table, the port parameter value field contains a Stream filter instance table as defined in 3GPP TS 23.501 [2] table 5.28.3.1-1, encoded as the value part of the Stream filter instance table information element as specified in clause 9.8.  When the port parameter name indicates Stream gate instance table, the port parameter value field contains a Stream gate instance table as defined in 3GPP TS 23.501 [2] table 5.28.3.1-1, encoded as the value part of the Stream gate instance table information element as specified in clause 9.9.  When the port parameter name indicates Supported PTP instance types, the port parameter value field contains an enumeration of supported PTP instance types as defined in IEEE Std 1588-2019 [11] clause 8.2.1.5.5 (see NOTE 2). The length of port parameter value field is set to the number of supported PTP instance types.  When the port parameter name indicates Supported transport types, the port parameter value field contains an enumeration of supported transport types as defined in IEEE Std 1588-2019 [11] Annexes C, D and E, with transport type "IPv4" encoded as "00000000", transport type "IPv6" encoded as "00000001" and transport type "Ethernet" encoded as "00000010". The length of port parameter value field is set to the number of supported transport types.  When the port parameter name indicates Supported PTP delay mechanisms, the port parameter value field contains an enumeration of supported delay mechanisms as defined in IEEE Std 1588-2019 [11] clause 8.2.15.4.4. The length of port parameter value field is set to the number of supported delay mechanisms.  When the port parameter name indicates PTP grandmaster capable, the port parameter value field indicates whether the DS-TT supports acting as a PTP grandmaster, with a Boolean value of FALSE encoded as "00000000" and a Boolean value of TRUE encoded as "00000001". The length of port parameter value field indicates a value of 1.  When the port parameter name indicates gPTP grandmaster capable, the port parameter value field indicates whether the DS-TT supports acting as a gPTP grandmaster, with a Boolean value of FALSE encoded as "00000000" and a Boolean value of TRUE encoded as "00000001". The length of port parameter value field indicates a value of 1.  When the port parameter name indicates Supported PTP profiles, the port parameter value field contains an enumeration of supported PTP profiles' profileNames as defined in IEEE Std 1588-2019 [11] clause 20.3.3, with the "SMPTE Profile for Use of IEEE-1588 Precision Time Protocol in Professional Broadcast Applications" as defined in ST 2059-2:2015 [13] encoded as "00000000", the "IEEE 802.1AS PTP profile for transport of timing" profile as defined in IEEE Std 802.1AS [12] encoded as "00000001", the "Default delay request-response profile" as defined in IEEE Std 1588-2019 [11] clause I.3 encoded as "00000010", the "Default delay peer-to-peer delay profile" as defined in IEEE Std 1588-2019 [11] clause I.4 encoded as "00000011" and the "High Accuracy Delay Request-Response Default PTP profile" as defined in IEEE Std 1588-2019 [11] clause I.5 encoded as "00000100". The length of port parameter value field is set to the number of supported PTP profiles.  When the port parameter name indicates Number of supported PTP instances, the port parameter value field contains the binary encoding of the number of supported PTP instances. The length of port parameter value field indicates a value of 2.  When the port parameter name indicates PTP instance list, the port parameter value field contains a PTP instance list as defined in 3GPP TS 23.501 [2] table 5.28.3.1-1, encoded as the value part of the PTP instance list information element as specified in clause 9.15.  When the hexadecimal encoding of the port parameter name is in the "8000H" to "FFFFH" range, the encoding of the port parameter value field and the value of the length of port parameter value field are deployment-specific. |
|  |
| NOTE 1: The "Set parameter" operation shall not be applicable for the following port parameter names: - 0001H txPropagationDelay; - 0008H Tick granularity; - 00A0H lldpV2RemChassisIdSubtype; - 00A1H lldpV2RemChassisId; - 00A2H lldpV2RemPortIdSubtype; - 00A3H lldpV2RemPortId; - 00A4H lldpTTL; - 00D0H PSFPMaxStreamFilterInstances; - 00D1H PSFPMaxStreamGateInstances; - 00D2H PSFPMaxFlowMeterInstances; and - 00D3H PSFPSupportedListMax.  NOTE 2: The DS-TT signals support for PTP instance type "PTP relay instance" by indicating support for PTP profile "IEEE 802.1AS PTP profile for transport of timing" in the Supported PTP profiles port parameter. |

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