**3GPP TSG-CT WG1 Meeting #132-eC1-215592**

**E-meeting, 11-15 October 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.539** | **CR** | **0007** | **rev** | **-** | **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:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Intel, NTT DOCOMO | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | IIoT | | | | |  | ***Date:*** | | | 26-SEP-2021 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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:*** | | SA2 has sent an LS in C1-215544/S2-2106767 to CT1 asking CT1   1. [..] to consider the feasibility of a generic stage 3 solution that would allow the TSN AF (or TSCTSF) to read / write / subscribe to a selected parameter in a larger UMIC or PMIC data structure in a more efficient manner, avoiding the transfer of additional data that are not related to the parameter that is being read, written or subscribed to. 2. Specific to the Write operation with UMIC or PMIC containing partial PTP instance information, SA2 asks CT1 to clarify the status of the PTP Instance information available in the TT that is not included in the UMIC or PMIC.   Regarding item a) this CR proposes to enhance Port management and User plane node management operations for supporting read, and subscribe using only a subset of parameter value. It is proposed to support only parameters containing instantiated data structures with named parameters and without breaking backwards compatibility to Rel-16. The Rel-17 parameters of interest are PTP instance list and DS-TT port time synchronization information list which are containing instantiated data structures with (already) named parameters.  Regarding item b) our understanding understanding is that the legacy set parameter operation sets the complete parameter value. For setting individual PTP Instance parameters it is therfore propsed to add a NOTE for clarification. | | | | | | | | |
| ***;*** | |  | | | | | | | | |
| ***Summary of change:*** | | Introduce enhancements to Port management and User plane node management operations for supporting read parameter, and subscribe-notify parameter using only a subset of parameter value.  Add a NOTE that in case of parameter name PTP instance list the TT port shall support setting of individual PTP instance parameters without changing PTP instance parameter value stored at the TT port previous to the operation and not included in the operation value.  Add a NOTE that in case of parameter name DS-TT port time synchronization information list the NW-TT shall support setting of individual PTP instance parameters without changing PTP instance parameter value stored at the NW-TT previous to the operation and not included in the operation value. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Management of PTP instance information not efficient. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.1.3, 5.2.2.2, 6.2.1.3, 6.2.2.2, 6.3.1.3, 6.3.2.2, 9.2, 9.4, 9.5B, 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 \*\*\*

#### 5.2.1.3 Network-requested port management procedure completion

Upon receipt of the MANAGE PORT COMMAND message, for each operation included in the port management list IE, the DS-TT shall:

a) if the operation code is "get capabilities", include the list of port management parameters supported by the DS-TT in the port management capability IE of the MANAGE PORT COMPLETE message;

b) if the operation code is "read parameter", attempt to read the value of the parameter at the DS-TT port, and:

1) if the value of the parameter at the DS-TT port is read successfully, include the parameter and its current value in the port status IE of the MANAGE PORT COMPLETE message; and

2) if the value of the parameter at the DS-TT port was not read successfully, include the parameter and associated port management service cause value in the port status IE of the MANAGE PORT COMPLETE message;

c) if the operation code is "set parameter", attempt to set the value of the parameter at the DS-TT port to the value specified in the operation, and:

1) if the value of the parameter at the DS-TT port is set successfully, include the parameter and its current value in the port update result IE of the MANAGE PORT COMPLETE message; and

2) if the value of the parameter at the DS-TT port was not set successfully, include the parameter and associated port management service cause value in the port update result IE of the MANAGE PORT COMPLETE message;

NOTE: In case of parameter name PTP instance list the DS-TT port shall support setting of individual PTP instance parameters without changing PTP instance parameter value stored at the DS-TT port previous to the operation and not included in the operation value.

d) if the operation code is "subscribe-notify for parameter", store the request from the TSN AF to be notified of changes in the value of the corresponding parameter;

e) if the operation code is "unsubscribe for parameter", delete the stored request from the TSN AF to be notified of changes in the value of the corresponding parameter, if any;

f) if the operation code is "read parameter subset", attempt to read the parameter value subset identified by parameter subset selector at the DS-TT port, and:

1) if the parameter value subset at the DS-TT port is read successfully, include the parameter and the current parmeter value subset in the port status IE of the MANAGE PORT COMPLETE message; and

2) if the parameter value subset at the DS-TT port was not read successfully, include the parameter and the associated port management service cause value in the port status IE of the MANAGE PORT COMPLETE message;

g) if the operation code is "subscribe-notify for parameter subset", store the request from the TSN AF to be notified of changes in the parameter value subset identified by parameter subset selector. Any "subscribe-notify for parameter" or "subscribe-notify for parameter subset" request for the same parameter previously stored at the DS-TT will be replaced with the new request; and

h) send the MANAGE PORT COMPLETE to the TSN AF via the SMF and the PCF as specified in 3GPP TS 23.502 [3].

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

#### 5.2.2.2 DS-TT-initiated port management procedure initiation

In order to initiate the DS-TT-initiated port management procedure, the DS-TT shall create an PORT MANAGEMENT NOTIFY message and shall:

a) include the port management parameters to be reported to the TSN AF with their current value or value subset (identified by parameter subset selector stored at the DS-TT) in the port status IE of the PORT MANAGEMENT NOTIFY message;

b) start timer T200; and

c) send the PORT MANAGEMENT NOTIFY message to the TSN AF via the SMF and the PCF as specified in 3GPP TS 23.502 [3].



Figure 5.2.2.2.1: DS-TT-initiated port management procedure

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

#### 6.2.1.3 TSN AF-requested port management procedure completion

Upon receipt of the MANAGE PORT COMMAND message, for each operation included in the port management list IE, the NW-TT shall:

a) if the operation code is "get capabilities", include the list of port management parameters supported by the NW-TT in the port management capability IE of the MANAGE PORT COMPLETE message;

b) if the operation code is "read parameter", attempt to read the value of the parameter at the NW-TT port, and:

1) if the value of the parameter at the NW-TT port is read successfully, include the parameter and its current value in the port status IE of the MANAGE PORT COMPLETE message; and

2) if the value of the parameter at the NW-TT port was not read successfully, include the parameter and associated port management service cause value in the port status IE of the MANAGE PORT COMPLETE message;

c) if the operation code is "set parameter", attempt to set the value of the parameter at the NW-TT port to the value specified in the operation, and:

1) if the value of the parameter at the NW-TT port is set successfully, include the parameter and its current value in the port update result IE of the MANAGE PORT COMPLETE message; and

2) if the value of the parameter at the NW-TT port was not set successfully, include the parameter and associated port management service cause value in the port update result IE of the MANAGE PORT COMPLETE message;

NOTE: In case of parameter name PTP instance list the NW-TT port shall support setting of individual PTP instance parameters without changing PTP instance parameter value stored at the NW-TT port previous to the operation and not included in the operation value.

d) if the operation code is "subscribe-notify for parameter", store the request from the TSN AF to be notified of changes in the value of the corresponding parameter;

e) if the operation code is "unsubscribe for parameter", delete the stored request from the TSN AF to be notified of changes in the value of the corresponding parameter, if any;

f) if the operation code is "read parameter subset", attempt to read the parameter value subset identified by parameter subset selector at the NW-TT port, and:

1) if the parameter value subset at the NW-TT port is read successfully, include the parameter and the current parmeter value subset in the port status IE of the MANAGE PORT COMPLETE message; and

2) if the parameter value subset at the NW-TT port was not read successfully, include the parameter and the associated port management service cause value in the port status IE of the MANAGE PORT COMPLETE message;

g) if the operation code is "subscribe-notify for parameter subset", store the request from the TSN AF to be notified of changes in the parameter value subset identified by parameter subset selector. Any "subscribe-notify for parameter" or "subscribe-notify for parameter subset" request for the same parameter previously stored at the NW-TT port will be replaced with the new request; and

h) send the MANAGE PORT COMPLETE to the TSN AF via the SMF and the PCF as specified in 3GPP TS 23.502 [3].

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

#### 6.2.2.2 NW-TT-initiated port management procedure initiation

In order to initiate the NW-TT-initiated port management procedure, the NW-TT shall create an PORT MANAGEMENT NOTIFY message and shall:

a) include the port management parameters to be reported to the TSN AF with their current value or value subset (identified by parameter subset selector stored at the NW-TT) in the port status IE of the PORT MANAGEMENT NOTIFY message;

b) start timer T300; and

c) send the PORT MANAGEMENT NOTIFY message to the TSN AF via the SMF and the PCF as specified in 3GPP TS 23.502 [3].



Figure 6.2.2.2.1: NW-TT-initiated port management procedure

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

#### 6.3.1.3 TSN AF-requested User plane node management procedure completion

Upon receipt of the MANAGE USER PLANE NODE COMMAND message, for each operation included in the User plane node management list IE, the NW-TT shall:

a) if the operation code is "get capabilities", include the list of User plane node management parameters supported by the NW-TT in the User plane node management capability IE of the MANAGE USER PLANE NODE COMPLETE message;

b) if the operation code is "read parameter", attempt to read the value of the user plane node management parameter at the NW-TT, and:

1) if the value of the parameter at the NW-TT is read successfully, include the parameter and its current value in the User plane node status IE of the MANAGE USER PLANE NODE COMPLETE message; and

2) if the value of the parameter at the NW-TT was not read successfully, include the parameter and associated User plane node management service cause value in the User plane node status IE of the MANAGE USER PLANE NODE COMPLETE message;

c) if the operation code is "set parameter", attempt to set the value of the user plane node management parameter at the NW-TT to the value specified in the operation, and:

1) if the value of the parameter at the NW-TT is set successfully, include the parameter and its current value in the User plane node update result IE of the MANAGE USER PLANE NODE COMPLETE message; and

2) if the value of the parameter at the NW-TT was not set successfully, include the parameter and associated User plane node management service cause value in the User plane node update result IE of the MANAGE USER PLANE NODE COMPLETE message;

NOTE: In case of parameter name DS-TT port time synchronization information list the NW-TT shall support setting of individual PTP instance parameters without changing PTP instance parameter value stored at the NW-TT previous to the operation and not included in the operation value.

d) if the operation code is "subscribe-notify for parameter", store the request from the TSN AF to be notified of changes in the value of the corresponding user plane node management parameter;

e) if the operation code is "unsubscribe for parameter", delete the stored request from the TSN AF to be notified of changes in the value of the corresponding user plane node management parameter, if any;

f) if the operation code is "read parameter subset", attempt to read the parameter value subset identified by parameter subset selector at the NW-TT, and:

1) if the parameter value subset at the NW-TT is read successfully, include the parameter and the current parameter value subset in the User plane node status IE of the MANAGE USER PLANE NODE COMPLETE message; and

2) if the parameter value subset at the NW-TT was not read successfully, include the parameter and the associated User plane node service cause value in the User plane node status IE of the MANAGE USER PLANE NODE COMPLETE message;

g) if the operation code is "subscribe-notify for parameter subset", store the request from the TSN AF to be notified of changes in the parameter value subset identified by parameter subset selector. Any "subscribe-notify for parameter" or "subscribe-notify for parameter subset" request for the same parameter previously stored at the NW-TT will be replaced with the new request; and

h) send the MANAGE USER PLANE NODE COMPLETE to the TSN AF via the SMF and the PCF as specified in 3GPP TS 23.502 [3].

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

#### 6.3.2.2 NW-TT-initiated User plane node management procedure initiation

In order to initiate the NW-TT-initiated User plane node management procedure, the NW-TT shall create a USER PLANE NODE MANAGEMENT NOTIFY message and shall:

a) include the User plane node management parameters to be reported to the TSN AF with their current value or value subset (identified by parameter subset selector stored at the NW-TT) in the User plane node status IE of the USER PLANE NODE MANAGEMENT NOTIFY message;

b) start timer T350; and

c) send the USER PLANE NODE MANAGEMENT NOTIFY message to the TSN AF via the SMF and the PCF as specified in 3GPP TS 23.502 [3].



Figure 6.3.2.2.1: NW-TT-initiated User plane node management procedure

\*\*\* Next 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, figure 9.2.6, 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"

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

Figure 9.2.6: Operation for operation code set to "00000110", or "0000111"

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 1)  0 0 0 0 0 1 0 0 Subscribe-notify for parameter |
| 0 0 0 0 0 1 0 1 Unsubscribe for parameter |
| 0 0 0 0 0 1 1 0 Read parameter subset (NOTE 3) |
| 0 0 0 0 0 1 1 1 Subscribe-notify for parameter subset (NOTE 3) |
| 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  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  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 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 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. |
|  |
| Length of parameter subset selector (octets d+3 to d+4)  This field contains the binary encoding of the length of the parameter subset selector value.  Parameter subset selector value (octet d+5 to e)  When the port parameter name indicates PTP instance list, the parameter subset selector value field contains the value part of the PTP instance list information element as specified in clause 9.15 containing one or more PTP-instance(s) with PTP instance ID set to the selected PTP instance. Each PTP instance includes zero or more PTP instance parameter(s) with PTP instance parameter name set to the selected PTP instance parameter and length of PTP instance parameter always set to zero. If no PTP instance parameter is included in a specific PTP instance the entire PTP instance is selected with all PTP instance parameters stored at the DS-TT or NW-TT port. |
| 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.  NOTE 3: The "Read parameter subset" operation, and "Subscribe-notify for parameter subset" operation shall be applicable only for the following port parameter name: - 00E9H PTP instance list |

\*\*\* Next 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 parameter subset selector not supported  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 \*\*\*

## 9.5B User plane node management list

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

The User plane node management list information element is coded as shown in figure 9.5B.1, figure 9.5B.2, figure 9.5B.3, figure 9.5B.4, figure 9.5B.5, figure 9.5B.6, and table 9.5B.1.

The User plane node management list information element has a minimum length of 4 octets and a maximum length of 65530 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| User plane node management list IEI | | | | | | | | octet 1 |
| Length of User plane node management list contents | | | | | | | | octet 2  octet 3 |
| User plane node management list contents | | | | | | | | octet 4  octet z |

Figure 9.5B.1: User plane node 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 9.5B.2: User plane node management list contents

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

Figure 9.5B.3: Operation for operation code set to "00000001"

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

Figure 9.5B.4: Operation for operation code set to "00000010", "00000100", or "00000101"

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

Figure 9.5B.5: Operation for operation code set to "00000011"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Operation code | | | | | | | | octet d |
| User plane node parameter name | | | | | | | | octet d+1  octet d+2 |
| Length of parameter subset selector | | | | | | | | octet d+3 octet d+4 |
| Parameter subset selector value | | | | | | | | octet d+5  octet e |

Figure 9.5B.6: Operation for operation code set to "00000110", or "0000111"

Table 9.5B.1: User plane node management list information element

|  |
| --- |
| Value part of the User plane node management list information element (octets 4 to z) |
|  |
| The value part of the User plane node 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 1)  0 0 0 0 0 1 0 0 Subscribe-notify for parameter |
| 0 0 0 0 0 1 0 1 Unsubscribe for parameter |
| 0 0 0 0 0 1 1 0 Read parameter subset (NOTE 6) |
| 0 0 0 0 0 1 1 1 Subscribe-notify for parameter subset (NOTE 6) |
| All other values are spare. |
|  |
| User plane node parameter name (octets d+1 to d+2) |
|  |
| This field contains the name of the User plane node parameter to which the operation applies, encoded as follows:  - 0000H Reserved;  - 0001H User plane node Address;  - 0002H Spare (NOTE 2)  - 0003H User plane node ID;  - 0004H NW-TT port numbers;  - 0005H  to Spare  - 0009H  - 0010H Spare (NOTE 3)  - 0010H Spare (NOTE 4)  - 0012H Static filtering entries;  - 0013H  to Spare  - 0019H  - 0020H lldpV2PortConfigAdminStatusV2;  - 0021H lldpV2LocChassisIdSubtype;  - 0022H lldpV2LocChassisId;  - 0023H lldpV2MessageTxInterval;  - 0024H lldpV2MessageTxHoldMultiplier;  - 0025H  to Spare  - 004FH  - 0050H DS-TT port neighbor discovery configuration for DS-TT ports  - 0051H Discovered neighbor information for DS-TT ports  - 0052H  to Spare  - 006FH  - 0070H PSFPMaxStreamFilterInstances;  - 0071H PSFPMaxStreamGateInstances;  - 0072H PSFPMaxFlowMeterInstances;  - 0073H PSFPSupportedListMax;  - 0074H Supported PTP instance types  - 0075H Supported transport types  - 0076H Supported delay mechanisms  - 0077H PTP grandmaster capable  - 0078H gPTP grandmaster capable  - 0079H Supported PTP profiles  - 007AH Number of supported PTP instances  - 007BH DS-TT port time synchronization information list  - 007CH  to Spare  - 7FFFH  - 8000H  to Reserved for deployment specific parameters  - FFFFH |
| Length of User plane node parameter value (octets d+3 to d+4) |
|  |
| This field contains the binary encoding of the length of the User plane node parameter value |
|  |
| User plane node parameter value (octet d+5 to e) |
|  |
| This field contains the value to be set for the User plane node parameter.  When the User plane node parameter name indicates User plane node Address, the User plane node parameter value field contains the values of User plane node Address as defined in IEEE Std 802.1Q [7] clause 8.13.8. The length of User plane node parameter value field indicates a value of 6.  When the User plane node parameter name indicates User plane node ID, the User plane node parameter value field contains the values of User plane node Identifier as defined in IEEE Std 802.1Q [7] clause 14.2.5. The length of User plane node parameter value field indicates a value of 8.  When the User plane node parameter name indicates NW-TT port numbers, the User plane node parameter value field contains NW-TT port numbers as defined in 3GPP TS 23.501 [2] table 5.28.3.1-2, encoded as the value part of the NW-TT port numbers information element as specified in clause 9.14.  When the User plane node parameter name indicates Static filtering entries, the User plane node parameter value field contains Static filtering entries as defined in 3GPP TS 23.501 [2] table 5.28.3.1-2, encoded as the value part of the Static filtering entries information element as specified in clause 9.6.  When the User plane node parameter name indicates lldpV2PortConfigAdminStatusV2, the User plane node 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 User plane node parameter value field indicates a value of 1.  When the User plane node parameter name indicates lldpV2LocChassisIdSubtype, the User plane node parameter value field contains values of lldpV2LocChassisIdSubtype as specified in IEEE Std 802.1AB [6] clause 8.5.2.2. The length of User plane node parameter value field indicates a value of 1.  When the User plane node parameter name indicates lldpV2LocChassisId, the User plane node 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 User plane node parameter value field indicates the length of the octet string with a maximum value of 255.  When the User plane node parameter name indicates lldpV2MessageTxInterval, the User plane node parameter value field contains the value of lldpV2MessageTxInterval as specified in IEEE Std 802.1AB [6] table 11-2. The length of User plane node parameter value field indicates a value of 2.  When the User plane node parameter name indicates lldpV2MessageTxHoldMultiplier, the User plane node parameter value field contains the value of lldpV2MessageTxHoldMultiplier as specified in IEEE Std 802.1AB [6] table 11-2. The length of User plane node parameter value field indicates a value of 1.  When the User plane node parameter name indicates DS-TT port neighbor discovery configuration for DS-TT ports, the User plane node parameter value field contains DS-TT port neighbor discovery configuration for DS-TT ports as defined in 3GPP TS 23.501 [2] table 5.28.3.1-2, encoded as the value part of the DS-TT port neighbor discovery configuration for DS-TT ports information element as specified in clause 9.10.  When the User plane node parameter name indicates Discovered neighbor information for DS-TT ports, the User plane node parameter value field contains Discovered neighbor information for DS-TT ports as defined in 3GPP TS 23.501 [2] table 5.28.3.1-2, encoded as the value part of the Discovered neighbor information for DS-TT ports information element as specified in clause 9.11.  When the User plane node parameter name indicates MaxStreamFilterInstances, the User plane node parameter value field contains the value of PSFPMaxStreamFilterInstances as specified in IEEE Std 802.1Q [7] clause 12.31.1.1. The length of User plane node parameter value field indicates a value of 4.  When the User plane node parameter name indicates PSFPMaxStreamGateInstances, the User plane node parameter value field contains the value of MaxStreamGateInstances as specified in IEEE Std 802.1Q [7] clause 12.31.1.1. The length of User plane node parameter value field indicates a value of 4.  When the User plane node parameter name indicates PSFPMaxFlowMeterInstances, the User plane node parameter value field contains the value of MaxFlowMeterInstances as specified in IEEE Std 802.1Q [7] Table 12-31. The length of User plane node parameter value field indicates a value of 4.  When the User plane node parameter name indicates PSFPSupportedListMax, the User plane node parameter value field contains the value of SupportedListMax as specified in IEEE Std 802.1Q [7] clause 12. 31.1.4. The length of User plane node parameter value field indicates a value of 4.  When the User plane node parameter name indicates Supported PTP instance types, the User plane node 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 5). The length of User plane node parameter value field is set to the number of supported PTP instance types.  When the User plane node parameter name indicates Supported transport types, the User plane node 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 User plane node parameter value field is set to the number of supported transport types.  When the User plane node parameter name indicates Supported PTP delay mechanisms, the User plane node 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 User plane node parameter value field is set to the number of supported delay mechanisms.  When the User plane node parameter name indicates PTP grandmaster capable, the User plane node parameter value field indicates whether the NW-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 User plane node parameter value field indicates a value of 1.  When the User plane node parameter name indicates gPTP grandmaster capable, the User plane node parameter value field indicates whether the NW-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 User plane node parameter value field indicates a value of 1.  When the User plane node parameter name indicates Supported PTP profiles, the User plane node 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 User plane node parameter value field is set to the number of supported PTP profiles.  When the User plane node parameter name indicates Number of supported PTP instances, the User plane node parameter value field contains the binary encoding of the number of supported PTP instances. The length of User plane node parameter value field indicates a value of 2.  When the User plane node parameter name indicates DS-TT port time synchronization information list, the User plane node parameter value field contains a DS-TT port time synchronization information list as defined in 3GPP TS 23.501 [2] table 5.28.3.1-2, encoded as the value part of the DS-TT port time synchronization information list information element as specified in clause 9.16.  When the hexadecimal encoding of the User plane node parameter name is in the "8000H" to "FFFFH" range, the encoding of the User plane node parameter value field and the value of the length of User plane node parameter value field are deployment-specific. |
|  |
| Length of parameter subset selector (octets d+3 to d+4)  This field contains the binary encoding of the length of the parameter subset selector value  Parameter subset selector value (octet d+5 to e)  When the user plane node parameter name indicates DS-TT port time synchronization information list, the parameter subset selector value field contains the value part of the DS-TT port time synchronization information list information element as specified in clause 9.16 containing one or more DS-TT port time synchronization information instance(s) with DS-TT port number set to the selected DS-TT port time synchronization information instance. Each DS-TT port time synchronization information instance includes zero or more PTP instance(s) with PTP instance ID set to the selected PTP instance. Each PTP instance includes zero or more PTP instance parameter(s) with PTP instance parameter name set to the selected PTP instance parameter and length of PTP instance parameter always set to zero. If no PTP instance is included in a specific DS-TT port time synchronization information instance the entire DS-TT port time synchronization information instance is selected with all PTP instances stored at the NW-TT. If no PTP instance parameter is included in a specific PTP instance, the entire PTP instance is selected with all PTP instance parameters stored at the NW-TT. In case of DS-TT port number set to zero (wildcard value) the selected PTP instance(s) and selected PTP instance parameter(s) are selected in all DS-TT port time synchronization information instance(s) stored at the NW-TT. |
| NOTE 1: The "Set parameter" operation shall not be applicable for the following bridge parameter names: - 0001H User plane node Address; - 0003H User plane node ID; - 0004H NW-TT port numbers; - 0051H Discovered neighbor information for DS-TT ports; - 0070H PSFPMaxStreamFilterInstances; - 0071H PSFPMaxStreamGateInstances; - 0072H PSFPMaxFlowMeterInstances; and - 0073H PSFPSupportedListMax.  NOTE 2: Implementations compliant with earlier versions of this release of the specification can interpret these values as signalling the User plane node Name.  NOTE 3: Implementations compliant with earlier versions of this release of the specification can interpret these values as signalling the Chassis ID subtype.  NOTE 4: Implementations compliant with earlier versions of this release of the specification can interpret these values as signalling the Chassis ID.  NOTE 5: The NW-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 User plane node parameter.  NOTE 6: The "Read parameter subset" operation, and "Subscribe-notify for parameter subset" operation, shall be applicable only for the following port parameter names: - 007BH DS-TT port time synchronization information list |

\*\*\* 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 9.4.1: 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 parameter subset selector not supported  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 changes \*\*\*