**3GPP TSG-CT1 Meeting #124-e**  ***C1-203792***

**Online, , 2nd Jun 2020 - 10th Jun 2020 (was C1-203340)**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.519** | **CR** | **0004** | **rev** | **1** | **Current version:** | **16.0.0** |  |
|  | | | | | | | | |
| *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, Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | Vertical\_LAN | | | | |  | ***Date:*** | | | 2020-05-25 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | SA2 has agreed to introduce the Bridge management information container as part of CR#2230 to TS 23.501 (see S2-2003260) | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Bridge management information container and related procedures are added. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Transfer of Bridge management information not supported | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 1, 2, 4, 6.1, new 6.3, new 8.7, new 8.8, new 8.9, new 8.10, 9.2, new 9.5A, new 9.5B, new 9.5C, new 9.5D, new 9.5E, new 9.10, new 9.11, 10 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 23.501 CR 2230 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | rev 1:   * dependency on TS 23.501 CR 2230 added * IEI assignment aligned with TS 24.007. | | | | | | | | |

\*\*\* First change \*\*\*

# 1 Scope

The present document specifies the protocols of communication between a DS-TT and a TSN AF or a NW-TT and a TSN AF as specified in 3GPP TS 23.501 [2] for:

a) Ethernet port management; and

b) Bridge management.

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

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[3] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[4] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General aspects".

[5] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[5A] 3GPP TS 29.244: "Interface between the Control Plane and the User Plane nodes".

[5B] 3GPP TS 29.512: "5G System; Session Management Policy Control Service; Stage 3".

[6] IEEE 802.1AB-2016: "IEEE Standard for Local and metropolitan area networks -- Station and Media Access Control Connectivity Discovery".

[7] IEEE 802.1Q-2018: "Standard for Local and metropolitan area networks--Bridges and Bridged Networks".

[8] IEEE 802.1Qbv-2015: "IEEE Standard for Local and metropolitan area networks -- Bridges and Bridged Networks - Amendment 25: Enhancements for Scheduled Traffic".

[9] IEEE 802.1Qcc-2018: "Standard for Local and metropolitan area networks - Bridges and Bridged Networks - Amendment: Stream Reservation Protocol (SRP) Enhancements and Performance Improvements".

# 4 General

For time sensitive communication (TSC), a 5G system (5GS) can be integrated as a bridge in a time-sensitive networking (TSN) network (i.e. a TSN bridge).

The device-side TSN translator (DS-TT) is deployed at the UE-side edge and the network-side TSN translator (NW-TT) is deployed at the network-side edge in order to interface with a TSN network while achieving transparency (see 3GPP TS 23.501 [2]). In addition, the TSN application function (TSN AF) is deployed to exchange TSN bridge information with the central network controller (CNC). The TSN bridge information includes port management information and bridge management information. Port management information is related to Ethernet ports located in the DS-TT and NW-TT. Bridge management information is related to the NW-TT.

In order to support TSN bridge information exchange between TSN AF and CNC, the DS-TT, NW-TT, and TSN AF support procedures for Ethernet port management and Bridge management. Clause 5 describes details of the elementary procedures between TSN AF and DS-TT for Ethernet port management. Clause 6 describes details of the elementary procedures between TSN AF and NW-TT for Ethernet port management (clause 6.2) and Bridge management (clause 6.3).

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

## 6.1 General

The TSN AF and NW-TT supports transfer of standardized and deployment-specific Ethernet port management information, to manage the Ethernet port used at the NW-TT. The TSN AF and NW-TT supports transfer of standardized and deployment-specific Bridge management information, to manage the NW-TT. The Ethernet port management messages are included in the "PortManagementContainer" data type (as specified in 3GPP TS 29.512 [5B]) and the Port Management Information Container IE (as specified in 3GPP TS 29.244 [5A]) and the Bridge management messages are included in the "BridgeManagementContainer" data type (as specified in 3GPP TS 29.512 [5B]) and the Bridge Management Information Container IE (as specified in 3GPP TS 29.244 [5A]). Both the Ethernet port management messages and the Bridge management messages are transported using the N4 Session Level Reporting Procedure and the SM policy association modification procedure as specified in 3GPP TS 23.502 [3].

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

## 6.3 Procedures for Bridge management service

### 6.3.1 TSN AF-requested Bridge management procedure

#### 6.3.1.1 General

The purpose of the TSN AF-requested Bridge management procedure is to enable the TSN AF to:

a) obtain the list of bridge management parameters supported at the NW-TT;

b) obtain the current values of bridge management parameters at the NW-TT;

c) set the values of bridge management parameters at the NW-TT; or

d) subscribe to be notified by the NW-TT if the values of certain bridge management parameters change at the NW-TT; or

e) unsubscribe to be notified by the NW-TT for one or more bridge management parameters.

#### 6.3.1.2 TSN AF-requested Bridge management procedure initiation

In order to initiate the TSN AF-requested Bridge management procedure, the TSN AF shall:

a) encode the information about the bridge management parameters values to be read, the bridge management parameters values to be set, the bridge management parameters changes to (un)subscribe to and whether the TSN AF requests the list of bridge management parameters supported by the NW-TT in an Bridge management list IE as specified in clause 9.5B and include it in a MANAGE BRIDGE COMMAND message;

b) send the MANAGE BRIDGE COMMAND message to the NW-TT via the PCF and the SMF as specified in 3GPP TS 23.502 [3]; and

c) start timer T150 (see example in figure 6.3.1.2.1).



Figure 6.3.1.2.1: TSN AF-requested Bridge management procedure

#### 6.3.1.3 TSN AF-requested Bridge management procedure completion

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

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

b) if the operation code is "read parameter", attempt to read the value of the bridge 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 Bridge status IE of the MANAGE BRIDGE COMPLETE message; and

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

c) if the operation code is "set parameter", attempt to set the value of the bridge 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 Bridge update result IE of the MANAGE BRIDGE COMPLETE message; and

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

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 bridge 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 bridge management parameter, if any; and

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

#### 6.3.1.4 Abnormal cases in the TSN AF

The following abnormal cases can be identified:

a) T150 expired.

The TSN AF shall, on the first expiry of the timer T150, retransmit the MANAGE BRIDGE COMMAND message and shall reset and start timer T150. This retransmission is repeated four times, i.e. on the fifth expiry of timer T150, the TSN AF shall abort the procedure.

#### 6.3.1.5 Abnormal cases in the NW-TT

The following abnormal cases can be identified:

a) Transmission failure of the MANAGE BRIDGE COMPLETE message indication from lower layers.

The NW-TT shall not diagnose an error and consider the TSN AF-initiated Bridge management procedure complete.

NOTE: Considering that the TSN AF-initiated Bridge management procedure complete as a result of this abnormal case does not cause the NW-TT to revert the execution of the operations included in the MANAGE BRIDGE COMMAND message.

### 6.3.2 NW-TT-initiated Bridge management procedure

#### 6.3.2.1 General

The purpose of the NW-TT-initiated Bridge management procedure is to notify the TSN AF of one or more changes in the value of Bridge management parameters for which the TSN AF had requested to be notified of changes via the TSN AF-initiated Bridge management procedure.

#### 6.3.2.2 NW-TT-initiated Bridge management procedure initiation

In order to initiate the NW-TT-initiated Bridge management procedure, the NW-TT shall create a BRIDGE MANAGEMENT NOTIFY message and shall:

a) include the Bridge management parameters to be reported to the TSN AF with their current value in the Bridge status IE of the BRIDGE MANAGEMENT NOTIFY message;

b) start timer T350; and

c) send the BRIDGE 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 Bridge management procedure

#### 6.3.2.3 NW-TT-initiated Bridge management procedure completion

Upon receipt of the BRIDGE MANAGEMENT NOTIFY message, the TSN AF shall:

a) create a MANAGE BRIDGE MANAGEMENT NOTIFY ACK message; and

b) send the MANAGE BRIDGE MANAGEMENT NOTIFY ACK message to the NW-TT via the PCF and the SMF as specified in 3GPP TS 23.502 [3].

Upon receipt of the BRIDGE MANAGEMENT NOTIFY ACK message, the NW-TT shall stop timer T350.

#### 6.3.2.4 Abnormal cases in the TSN AF

The following abnormal cases can be identified:

a) Transmission failure of the BRIDGE MANAGEMENT NOTIFY ACK indication from lower layers.

The TSN AF shall not diagnose an error and consider the NW-TT-initiated Bridge management procedure complete.

#### 6.3.2.5 Abnormal cases in the NW-TT

The following abnormal cases can be identified:

a) T350 expired.

The NW-TT shall, on the first expiry of the timer T350, retransmit the BRIDGE MANAGEMENT NOTIFY message and shall reset and start timer T350. This retransmission is repeated four times, i.e. on the fifth expiry of timer T350, the NW-TT shall abort the procedure.

b) Transmission failure of the BRIDGE MANAGEMENT NOTIFY COMPLETE message indication from lower layers.

The NW-TT shall not diagnose an error and consider the NW-TT-initiated Bridge management procedure complete.

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

## 8.7 Manage Bridge command

### 8.7.1 Message definition

The MANAGE BRIDGE COMMAND message is sent by the TSN AF to the NW-TT to manage the Bridge functionalties, see table 8.7.1.1

Message type: MANAGE BRIDGE COMMAND

Significance: dual

Direction: TSN AF to NW-TT

Table 8.7.1.1: MANAGE BRIDGE COMMAND message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | MANAGE BRIDGE COMMAND message identity | Bridge management service message type  9.5A | M | V | 1 |
|  | Bridge management list | Bridge management list  9.5B | M | LV-E | 3-65534 |
| NOTE: The total length of the MANAGE BRIDGE COMMAND message cannot exceed 65535 octets (see Bridge Management Information Container maximum length as specified as in 3GPP TS 29.244 [5A]). | | | | | |

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

## 8.8 Manage Bridge complete

### 8.8.1 Message definition

The MANAGE BRIDGE COMPLETE message is sent by the NW-TT to the TSN AF to complete the TSN AF-initiated Bridge management procedure, see table 8.8.1.1

Message type: MANAGE BRIDGE COMPLETE

Significance: dual

Direction: NW-TT to TSN AF

Table 8.8.1.1: MANAGE BRIDGE COMPLETE message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | MANAGE BRIDGE COMPLETE message identity | Bridge management service message type  9.5A | M | V | 1 |
| 70 | Bridge management capability | Bridge management capability  9.5C | O | TLV-E | 5-65534 |
| 71 | Bridget status | Bridge status  9.5D | O | TLV-E | 5-65534 |
| 72 | Bridge update result | Bridge update result  9.5E | O | TLV-E | 5-65534 |
| NOTE: The total length of the MANAGE BRIDGE COMPLETE message cannot exceed 65535 octets (see Bridge Management Information Container maximum length as specified as in 3GPP TS 29.244 [5A]). | | | | | |

### 8.8.2 Bridge management capability

This IE shall be included if the TSN AF has included an operation with operation code set to "get capabilities" in the MANAGE BRIDGE COMMAND message.

### 8.8.3 Bridge status

This IE shall be included if the TSN AF has included one or more operations with operation code set to "read parameter" in the MANAGE BRIDGE COMMAND message.

### 8.8.4 Bridge update result

This IE shall be included if the TSN AF has included one or more operations with operation code set to "set parameter" in the MANAGE BRIDGE COMMAND message.

## 8.9 Bridge management notify

### 8.9.1 Message definition

The BRIDGE MANAGEMENT NOTIFY message is sent by the NW-TT to the TSN AF to notify the TSN AF of one or more changes in the value of Bridge management parameters, see table 8.9.1.1

Message type: BRIDGE MANAGEMENT NOTIFY

Significance: dual

Direction: NW-TT to TSN AF

Table 8.9.1.1: BRIDGE MANAGEMENT NOTIFY message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | BRIDGE MANAGEMENT NOTIFY message identity | Bridge management service message type  9.5A | M | V | 1 |
|  | Bridge status | Bridge status  9.5D | M | LV-E | 4-65534 |
| NOTE: The total length of the BRIDGE MANAGEMENT NOTIFY message cannot exceed 65535 octets (see Bridge Management Information Container maximum length as specified as in 3GPP TS 29.244 [5A]). | | | | | |

## 8.10 Bridge management notify ack

### 8.10.1 Message definition

The BRIDGE MANAGEMENT NOTIFY ACK message is sent by the TSN AF to the NW-TT to acknowledge a BRIDGE MANAGEMENT NOTIFY message, see table 8.10.1.1

Message type: BRIDGE MANAGEMENT NOTIFY ACK

Significance: dual

Direction: TSN AF to NW-TT

Table 8.10.1.1: BRIDGE MANAGEMENT NOTIFY ACK message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | BRIDGE MANAGEMENT NOTIFY ACK message identity | Bridge management service message type  9.5A | M | V | 1 |

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

## 9.2 Ethernet port management list

The purpose of the Ethernet 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 Ethernet port management of the DS-TT or NW-TT to be performed at the DS-TT or NW-TT.

The Ethernet 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 Ethernet 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 |  |
| Ethernet port management list IEI | | | | | | | | octet 1 |
| Length of Ethernet port management list contents | | | | | | | | octet 2  octet 3 |
| Ethernet port management list contents | | | | | | | | octet 4  octet z |

Figure 9.2.1: Ethernet 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: Ethernet 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 |
| Bridge 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 |
| Bridge parameter name | | | | | | | | octet d+1  octet d+2 |
| Length of Bridge parameter value | | | | | | | | octet d+3 octet d+4 |
| Bridge parameter value | | | | | | | | octet d+5  octet e |

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

Table 9.2.1: Ethernet port management list information element

|  |
| --- |
| Value part of the Ethernet port management list information element (octets 4 to z) |
|  |
| The value part of the Ethernet 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  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. |
|  |
| Ethernet port parameter name (octets d+1 to d+2) |
|  |
| This field contains the name of the Ethernet 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  - 00DFH  - 00E0H Stream filter instance table  - 00E1H Stream gate instance table  - 00E2H  to Spare  - 7FFFH  - 8000H  to Reserved for deployment specific parameters  - FFFFH |
| Length of Ethernet port parameter value (octets d+3 to d+4) |
|  |
| This field contains the binary encoding of the length of the Ethernet port parameter value |
|  |
| Ethernet port parameter value (octet d+5 to e) |
|  |
| This field contains the value to be set for the Ethernet port parameter.  When the Ethernet port parameter name indicates txPropagationDelay, the Ethernet port parameter value field contains the binary representation of the txPropagationDelay as defined in IEEE 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 Ethernet port parameter value field shall be coded as "1" except the MSB bit. The length of Ethernet port parameter value indicates a value of 8.  When the Ethernet port parameter name indicates Traffic class table, the Ethernet port parameter value field contains the traffic class table as defined in IEEE 802.1Q [7], encoded as the value part of the Traffic class information element as specified in clause 9.7.  When the Ethernet port parameter name indicates GateEnabled, the Ethernet port parameter value field contains the value of GateEnabled as defined in IEEE 802.1Qbv [8], with a Boolean value of FALSE encoded as "00000000" and a Boolean value of TRUE encoded as "00000001". The length of Ethernet port parameter value field indicates a value of 1.  When the Ethernet port parameter name indicates AdminBaseTime, the Ethernet port parameter value field contains the value of the administrative base time as specified in IEEE 802.1Qbv [8]. The length of Ethernet port parameter value field indicates a value of 10.  When the Ethernet port parameter name indicates AdminControlListLength, the Ethernet port parameter value field contains the value of the AdminControlListLength as specified in IEEE 802.1Qbv [8]. The length of Ethernet port parameter value field indicates a value of 2.  When the Ethernet port parameter name indicates AdminControlList, the Ethernet port parameter value field contains the concatenation of AdminControlListLength entries, each encoded as a GateControlEntry as specified in IEEE 802.1Qbv [8].  When the Ethernet port parameter name indicates AdminCycleTime, the Ethernet port parameter value field contains the value of the AdminCycleTime as specified in IEEE 802.1Qbv [8]. The length of Ethernet port parameter value field indicates a value of 8.  When the Ethernet port parameter name indicates Tick granularity, the Ethernet port parameter value field contains the value of the Tick granularity as specified in IEEE 802.1Qbv [8]. The length of Ethernet port parameter value field indicates a value of 4.  When the Ethernet port parameter name indicates lldpV2PortConfigAdminStatusV2, the Ethernet port parameter value field contains values of lldpV2PortConfigAdminStatusV2 as specified in IEEE 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 Ethernet port parameter value field indicates a value of 1.  When the Ethernet port parameter name indicates lldpV2LocChassisIdSubtype, the Ethernet port parameter value field contains values of lldpV2LocChassisIdSubtype as specified in IEEE 802.1AB [6] clause 8.5.2.2. The length of Ethernet port parameter value field indicates a value of 1.  When the Ethernet port parameter name indicates lldpV2LocChassisId, the Ethernet port parameter value field contains values of lldpV2LocChassisId in the form of an octet string as specified in IEEE 802.1AB [6] clause 8.5.2.3. The length of Ethernet port parameter value field indicates the length of the octet string with a maximum value of 255.  When the Ethernet port parameter name indicates lldpV2MessageTxInterval, the Ethernet port parameter value field contains the value of lldpV2MessageTxInterval as specified in IEEE 802.1AB [6] table 11-2. The length of Ethernet port parameter value field indicates a value of 2.  When the Ethernet port parameter name indicates lldpV2MessageTxHoldMultiplier, the Ethernet port parameter value field contains the value of lldpV2MessageTxHoldMultiplier as specified in IEEE 802.1AB [6] table 11-2. The length of Ethernet port parameter value field indicates a value of 1.  When the Ethernet port parameter name indicates lldpV2LocPortIdSubtype, the Ethernet port parameter value field contains values of lldpV2LocPortIdSubtype as specified in IEEE 802.1AB [6] clause 8.5.3.2. The length of Ethernet port parameter value field indicates a value of 1.  When the Ethernet port parameter name indicates lldpV2LocPortId, the Ethernet port parameter value field contains values of lldpV2LocPortId in the form of an octet string as specified in IEEE 802.1AB [6] clause 8.5.3.3. The length of Ethernet port parameter value field indicates the length of the octet string with a maximum value of 255.  When the Ethernet port parameter name indicates lldpV2RemChassisIdSubtype, the Ethernet port parameter value field contains values of lldpV2RemChassisIdSubtype as specified in IEEE 802.1AB [6] clause 8.5.2.2. The length of Ethernet port parameter value field indicates a value of 1.  When the Ethernet port parameter name indicates lldpV2RemChassisId, the Ethernet port parameter value field contains values of lldpV2RemChassisId in the form of an octet string as specified in IEEE 802.1AB [6] clause 8.5.2.3. The length of Ethernet port parameter value field indicates the length of the octet string with a maximum value of 255.  When the Ethernet port parameter name indicates lldpV2RemPortIdSubtype, the Ethernet port parameter value field contains values of lldpV2RemPortIdSubtype as specified in IEEE 802.1AB [6] clause 8.5.3.2. The length of Ethernet port parameter value field indicates a value of 1.  When the Ethernet port parameter name indicates lldpV2RemPortId, the Ethernet port parameter value field contains values of lldpV2RemPortId in the form of an octet string as specified in IEEE 802.1AB [6] clause 8.5.3.3. The length of Ethernet port parameter value field indicates the length of the octet string with a maximum value of 255.  When the Ethernet port parameter name indicates lldpTTL, the Ethernet port parameter value field contains the value of TTL as specified in IEEE 802.1AB [6] clause 8.5.4. The length of Ethernet port parameter value field indicates a value of 2.  When the Ethernet port parameter name indicates Stream filter instance table, the Ethernet 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 Ethernet port parameter name indicates Stream gate instance table, the Ethernet 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 hexadecimal encoding of the Ethernet port parameter name is in the "8000H" to "FFFFH" range, the encoding of the Ethernet port parameter value field and the value of the length of Ethernet port parameter value field are deployment-specific. |
|  |

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

## 9.5A Bridge management service message type

Table 9.5A.1: Bridge management service message type

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 |  | | MANAGE BRIDGE COMMAND message |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |  | | MANAGE BRIDGE COMPLETE message |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | | BRIDGE MANAGEMENT NOTIFY message |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |  | | BRIDGE MANAGEMENT ACK message |
|  | | | | | | | | | | |
| All other values are reserved | | | | | | | | | | |

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

## 9.5B Bridge management list

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

The Bridge 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, and table 9.5B.1.

The Bridge management list information element has a minimum length of 4 octets and a maximum length of 65534 octets.

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

Figure 9.5B.1: Bridge 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: Bridge 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 |
| Bridge 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 |
| Bridge parameter name | | | | | | | | octet d+1  octet d+2 |
| Length of Bridge parameter value | | | | | | | | octet d+3 octet d+4 |
| Bridge parameter value | | | | | | | | octet d+5  octet e |

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

"

Table 9.5B.1: Bridge management list information element

|  |
| --- |
| Value part of the Bridge management list information element (octets 4 to z) |
|  |
| The value part of the Bridge 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  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. |
|  |
| Bridge parameter name (octets d+1 to d+2) |
|  |
| This field contains the name of the Bridge parameter to which the operation applies, encoded as follows:  - 0000H Reserved;  - 0001H Bridge Address;  - 0002H Bridge Name;  - 0003H Bridge ID;  - 0004H  to Spare  - 0009H  - 0010H Chassis ID subtype;  - 0011H Chassis ID;  - 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 PSFPMaxStreamFilterInstances;  - 0074H  to Spare  - 7FFFH  - 8000H  to Reserved for deployment specific parameters  - FFFFH |
| Length of Bridge parameter value (octets d+3 to d+4) |
|  |
| This field contains the binary encoding of the length of the Bridge parameter value |
|  |
| Bridge parameter value (octet d+5 to e) |
|  |
| This field contains the value to be set for the Bridge parameter.  When the Bridge parameter name indicates Bridge Address, the Bridge parameter value field contains the values of Bridge Address as defined in IEEE 802.1Q [7] clause 8.13.8. The length of Bridge parameter value field indicates a value of 6.  When the Bridge parameter name indicates Bridge Name, the Bridge parameter value field contains the values of Bridge Name in the form of an octet string as defined in IEEE 802.1Q [7] clause 12.4.1.3. The length of Bridge parameter value field indicates the length of the octet string with a maximum value of 32.  When the Bridge parameter name indicates Bridge ID, the Bridge parameter value field contains the values of Bridge Identifier as defined in IEEE 802.1Q [7] clause 14.2.5. The length of Bridge parameter value field indicates a value of 8.  When the Bridge parameter name indicates Chassis ID Subtype, the Bridge parameter value field contains the value of Chassis ID Subtype as defined in IEEE 802.1AB [6] clause 8.5.2.2. The length of Bridge parameter value field indicates a value of 1.  When the Bridge parameter name indicates Chassis ID, the Bridge parameter value field contains values of Chassis ID in the form of an octet string as specified in IEEE 802.1AB [6] clause 8.5.2.3. The length of Bridge parameter value field indicates the length of the octet string with a maximum value of 255.  When the Bridge parameter name indicates Static filtering entries, the Bridge 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 Bridge parameter name indicates lldpV2PortConfigAdminStatusV2, the Bridge parameter value field contains values of lldpV2PortConfigAdminStatusV2 as specified in IEEE 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 Bridge parameter value field indicates a value of 1.  When the Bridge parameter name indicates lldpV2LocChassisIdSubtype, the Bridge parameter value field contains values of lldpV2LocChassisIdSubtype as specified in IEEE 802.1AB [6] clause 8.5.2.2. The length of Bridge parameter value field indicates a value of 1.  When the Bridge parameter name indicates lldpV2LocChassisId, the Bridge parameter value field contains values of lldpV2LocChassisId in the form of an octet string as specified in IEEE 802.1AB [6] clause 8.5.2.3. The length of Bridge parameter value field indicates the length of the octet string with a maximum value of 255.  When the Bridge parameter name indicates lldpV2MessageTxInterval, the Bridge parameter value field contains the value of lldpV2MessageTxInterval as specified in IEEE 802.1AB [6] table 11-2. The length of Bridge parameter value field indicates a value of 2.  When the Bridge parameter name indicates lldpV2MessageTxHoldMultiplier, the Bridge parameter value field contains the value of lldpV2MessageTxHoldMultiplier as specified in IEEE 802.1AB [6] table 11-2. The length of Bridge parameter value field indicates a value of 1.  When the Bridge parameter name indicates DS-TT port neighbor discovery configuration for DS-TT ports, the Bridge 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 Bridge parameter name indicates Discovered neighbor information for DS-TT ports, the Bridge 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 Bridge parameter name indicates PSFPMaxStreamFilterInstances, the Bridge parameter value field contains the value of PSFPMaxStreamFilterInstances as specified in IEEE 802.1Q [7] Table 12-31. The length of Bridge parameter value field indicates a value of 4.  When the Bridge parameter name indicates PSFPMaxStreamGateInstances, the Bridge parameter value field contains the value of PSFPMaxStreamGateInstances as specified in IEEE 802.1Q [7] Table 12-31. The length of Bridge parameter value field indicates a value of 4.  When the Bridge parameter name indicates PSFPMaxFlowMeterInstances, the Bridge parameter value field contains the value of PSFPMaxFlowMeterInstances as specified in IEEE 802.1Q [7] Table 12-31. The length of Bridge parameter value field indicates a value of 4.  When the Bridge parameter name indicates PSFPMaxStreamFilterInstances, the Bridge parameter value field contains the value of PSFPMaxStreamFilterInstances as specified in IEEE 802.1Q [7] Table 12-31. The length of Bridge parameter value field indicates a value of 4.  When the hexadecimal encoding of the Bridge parameter name is in the "8000H" to "FFFFH" range, the encoding of the Bridge parameter value field and the value of the length of Bridge parameter value field are deployment-specific. |
|  |

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

## 9.5C Bridge management capability

The purpose of the Bridge management capability information element is to inform the TSN AF of the Bridge parameters supported by the NW-TT.

The Bridge management capability information element is coded as shown in figure 9.5C.1, figure 9.5C.2, and table 9.5C.1.

The Bridge management capability information element has a minimum length of 5 octets and a maximum length of 65534 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Bridge management capability IEI | | | | | | | | octet 1 |
| Length of Bridge management capability contents | | | | | | | | octet 2  octet 3 |
| Bridge management capability contents | | | | | | | | octet 4  octet z |

Figure 9.5C.1: Bridge management capability information element

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Supported Bridge parameter name 1 | | | | | | | | octet 4  octet 5 |
| Supported Bridge parameter name 2 | | | | | | | | octet 6  octet 7 |
| … | | | | | | | | octet 8  octet z-2 |
| Supported Bridge parameter name N | | | | | | | | octet z-1  octet z |

Figure 9.5C.2: Bridge management capability contents

Table 9.5C.1: Bridge management capability information element

|  |
| --- |
| Value part of the Bridge management capability information element (octets 4 to z) |
|  |
| The value part of the Bridge management capability information element consists of one or several supported Bridge parameter names, each encoded over 2 octets as specified in table 9.5B.1 for the NW-TT to TSN AF direction. |
|  |

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

## 9.5D Bridge status

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

The Bridge 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 Bridge 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 |  |
| Bridge status IEI | | | | | | | | octet 1 |
| Length of Bridge status and error contents | | | | | | | | octet 2  octet 3 |
| Bridge status contents | | | | | | | | octet 4  octet a |
| Bridge error contents | | | | | | | | octet a+1  octet z |

Figure 9.5D.1: Bridge status information element

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

Figure 9.5D.2: Bridge status contents

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

Figure 9.5D.3: Bridge parameter status

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

Figure 9.5D.4: Bridge error contents

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

Figure 9.5D.5: Bridge parameter error

Table 9.4.1: Bridge status information element

|  |
| --- |
| Value part of the Bridge status information element (octets 4 to z) |
|  |
| Bridge status contents (octets 4 to a)  This field consists of zero or several Bridge parameter statuses.  Bridge parameter status  Bridge parameter name (octets e to e+1) |
|  |
| This field contains the name of the Bridge 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 Bridge parameter value (octets e+2 to e+3) |
|  |
| This field contains the binary encoding of the length of the Bridge parameter value |
|  |
| Bridge parameter value (octets e+4 to f) |
|  |
| This field contains the value for the Bridge parameter, encoded as specified in table 9.2.1. |
| Bridge error contents (octets a+1 to z)  This field consists of zero or several Bridge parameter errors.  Bridge parameter error  Bridge parameter name (octets to i+1) |
|  |
| This field contains the name of the Bridge 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. |
| Bridge management service cause (octet i+2)  This field contains the Bridge management service cause indicating the reason why the value of the Bridge 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 Bridge parameter not supported  0 0 0 0 0 0 1 0 Invalid Bridge parameter value  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 \*\*\*

## 9.5E Bridge update result

The purpose of the Bridge update result information element is to report to the TSN AF the outcome of the request from the TSN AF to set one or more Bridge parameters to a specific value.

The Bridge update result information element is coded as shown in figure 9.5E.1, figure 9.5E.2, figure 9.5E.3, figure 9.5E.4, figure 9.5E.5, and table 9.5E.1.

The Bridge update result information element has a minimum length of 5 octets and a maximum length of 65534 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Bridge update result IEI | | | | | | | | octet 1 |
| Length of Bridge update and update error contents | | | | | | | | octet 2  octet 3 |
| Bridge update contents | | | | | | | | octet 4  octet a |
| Bridge update error contents | | | | | | | | octet a+1  octet z |

Figure 9.5E.1: Bridge update result information element

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

Figure 9.5E.2: Bridge update contents

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

Figure 9.5E.3: Bridge parameter update

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

Figure 9.5E.4: Bridge update error contents

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

Figure 9.5E.5: Bridge parameter error

Table 9.5E.1: Bridge update result information element

|  |
| --- |
| Value part of the Bridge update result information element (octets 4 to z) |
|  |
| Bridge update contents (octets 4 to a)  This field consists of zero or several Bridge parameter updates.  Bridge parameter update  Bridge parameter name (octets e to e+1) |
|  |
| This field contains the name of the Bridge parameter which could be set successfully, encoded over 2 octets as specified in table 9.5B.1 for the NW-TT to TSN AF direction. |
| Length of Bridge parameter value (octet e+2) |
|  |
| This field contains the binary encoding of the length of the Bridge parameter value |
|  |
| Bridge parameter value (octets e+3 to f) |
|  |
| Bridge error contents (octets a+1 to z)  This field consists of zero or several Bridge parameter errors.  Bridge parameter error  Bridge parameter name (octets i to i+1) |
|  |
| This field contains the name of the Bridge parameter whose value could not be set successfully, encoded over 2 octets as specified in table 9.5B.1 for the NW-TT to TSN AF direction. |
| Bridge management service cause (octet i+2)  This field contains the Bridge management service cause indicating the reason why the value of the Bridge parameter could not be set 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 Bridge parameter not supported  0 0 0 0 0 0 1 0 Invalid Bridge parameter value  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 \*\*\*

## 9.10 DS-TT port neighbor discovery configuration for DS-TT ports

The purpose of the DS-TT port neighbor discovery configuration for DS-TT ports information element is to convey DS-TT port neighbor discovery configuration for DS-TT ports as defined in 3GPP TS 23.501 [2] table 5.28.3.1-2.

The DS-TT port neighbor discovery configuration for DS-TT ports information element is coded as shown in figure 9.10.1, figure 9.10.2 and table 9.10.1.

The DS-TT port neighbor discovery configuration for DS-TT ports information element has a minimum length of 3 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| DS-TT port neighbor discovery configuration for DS-TT ports IEI | | | | | | | | octet 1 |
| Length of DS-TT port neighbor discovery configuration for DS-TT ports contents | | | | | | | | octet 2  octet 3 |
| DS-TT port neighbor discovery configuration for DS-TT ports instance 1 | | | | | | | | octet 4\*  octet x\* |
| … | | | | | | | |  |
| DS-TT port neighbor discovery configuration for DS-TT ports instance n | | | | | | | | octet y\*  octet z\* |

Figure 9.10.1: DS-TT port neighbor discovery configuration for DS-TT ports information element

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of DS-TT port neighbor discovery configuration for DS-TT ports instance | | | | | | | | octet 4  octet 5 |
| DS-TT port number value | | | | | | | | octet 6  octet 7 |
| lldpV2LocPortIdSubtype value | | | | | | | | octet 8 |
| Length of lldpV2LocPortId value | | | | | | | | octet 9 |
| lldpV2LocPortId value | | | | | | | | octet 10  octet x |

Figure 9.10.2: DS-TT port neighbor discovery configuration for DS-TT ports instance

Table 9.10.1: DS-TT port neighbor discovery configuration for DS-TT ports

|  |
| --- |
| Value part of the DS-TT port neighbor discovery configuration for DS-TT ports information element (octets 4 to z) |
|  |
| DS-TT port neighbor discovery configuration for DS-TT ports contents (octets 4 to z)  This field consists of zero or more DS-TT port neighbor discovery configuration for DS-TT ports instances. |
|  |
| DS-TT port neighbor discovery configuration for DS-TT ports instance (octets 4 to x) |
|  |
| Length of DS-TT port neighbor discovery configuration for DS-TT ports instance (octets 4 to 5)  Length of DS-TT port neighbor discovery configuration for DS-TT ports instance contains the length of the vale part of DS-TT port neighbor discovery configuration for DS-TT ports instance in octets. |
|  |
| DS-TT port number value (octets 6 to 7)  DS-TT port number value contains the value of Port Number as specified in IEEE 802.1Q [7]. |
|  |
| lldpV2LocPortIdSubtype value (octet 8)  lldpV2LocPortIdSubtype value contains the value of lldpV2LocPortIdSubtype as specified in IEEE 802.1AB [6] clause 8.5.3.2. |
|  |
| Length of lldpV2LocPortId value (octet 9)  Length of lldpV2LocPortId value contains the binary coded length in octets of lldpV2LocPortId value. |
|  |
| lldpV2LocPortId value (octets 10 to x)  lldpV2LocPortId value contains the value of lldpV2LocPortId in the form of an octet string as specified in IEEE 802.1AB [6] clause 8.5.3.3. |
|  |

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

## 9.11 Discovered neighbor information for DS-TT ports

The purpose of the Discovered neighbor information for DS-TT ports information element is to convey Discovered neighbor information for DS-TT ports as defined in 3GPP TS 23.501 [2] table 5.28.3.1-2.

The Discovered neighbor information for DS-TT ports information element is coded as shown in figure 9.11.1, figure 9.11.2 and table 9.11.1.

The Neighbor discovery information information element has a minimum length of 3 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Discovered neighbor information for DS-TT ports IEI | | | | | | | | octet 1 |
| Length of Discovered neighbor information for DS-TT ports contens | | | | | | | | octet 2  octet 3 |
| Discovered neighbor information for DS-TT ports instance 1 | | | | | | | | octet 4\*  octet x\* |
| … | | | | | | | |  |
| Discovered neighbor information for DS-TT ports instance n | | | | | | | | octet y\*  octet z\* |

Figure 9.11.1: Discovered neighbor information for DS-TT ports information element

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of Discovered neighbor information for DS-TT ports instance | | | | | | | | octet 4  octet 5 |
| DS-TT port number value | | | | | | | | octet 6  octet 7 |
| lldpTTL value | | | | | | | | octet 8  octet 9 |
| lldpV2RemChassisIdSubtype value | | | | | | | | octet 10 |
| Length of lldpV2RemChassisId value | | | | | | | | octet 11 |
| lldpV2RemChassisId value | | | | | | | | octet 12  octet a |
| lldpV2RemPortIdSubtype value | | | | | | | | octet a+1 |
| Length of lldpV2RemPortId value | | | | | | | | octet a+2 |
| lldpV2RemPortId value | | | | | | | | octet a+3  octet x |

Figure 9.11.2: Discovered neighbor information for DS-TT ports instance

Table 9.11.1: Discovered neighbor information for DS-TT ports

|  |
| --- |
| Value part of the Discovered neighbor information for DS-TT ports information element (octets 4 to z) |
|  |
| Neighbor discovery information contents (octets 4 to z)  This field consists of zero or more Neighbor discovery information instances. |
|  |
| Neighbor discovery information instance (octets 4 to x) |
|  |
| Length of Discovered neighbor information for DS-TT ports instance (octets 4 to 5)  Length of Discovered neighbor information for DS-TT ports instance contains the length of the vale part of Discovered neighbor information for DS-TT ports instance in octets. |
|  |
| DS-TT port number value (octets 6 to 7)  DS-TT port number value contains the value of Port Number as specified in IEEE 802.1Q [7]. |
|  |
| lldpTTL value (octets 8 to 9)  lldpTTL value contains the value of TTL as specified in IEEE 802.1AB [6] clause 8.5.4. |
|  |
| lldpV2RemChassisIdSubtype value (octet 10)  lldpV2RemChassisIdSubtype value contains the value of lldpV2RemChassisIdSubtype as specified in IEEE 802.1AB [6] clause 8.5.2.2. |
|  |
| Length of lldpV2RemChassisId value (octet 11)  Length of lldpV2RemChassisId value contains the binary coded length in octets of lldpV2RemChassisId value. |
|  |
| lldpV2RemChassisId value (octets 12 to a)  lldpV2RemChassisId value contains the value of lldpV2RemChassisId in the form of an octet string as specified in IEEE 802.1AB [6] clause 8.5.2.3. |
|  |
| lldpV2RemPortIdSubtype value (octet a+1)  lldpV2RemPortIdSubtype value contains the value of lldpV2RemPortIdSubtype as specified in IEEE 802.1AB [6] clause 8.5.3.2. |
|  |
| Length of lldpV2RemPortId value (octet a+2)  Length of lldpV2RemPortId value contains the binary coded length in octets of lldpV2RemPortId value. |
|  |
| lldpV2RemPortId value (octets a+3 to x)  lldpV2RemPortId value contains the value of lldpV2RemPortId in the form of an octet string as specified in IEEE 802.1AB [6] clause 8.5.3.3. |
|  |

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

# 10 Timers of Ethernet port management service

Timers of Ethernet port management service are shown in table 10.1, table 10.2, table 10.3, table 10.4 and table 10.5.

Table 10.1: Timers of Ethernet port management service – TSN AF side

| TIMER NUM. | TIMER VALUE | CAUSE OF START | NORMAL STOP | ON  THE 1st, 2nd, 3rd, 4th EXPIRY |
| --- | --- | --- | --- | --- |
| T35xx | NOTE | Transmission of MANAGE ETHERNET PORT COMMAND message | MANAGE ETHERNET PORT COMPLETE message received | Retransmission of MANAGE ETHERNET PORT COMMAND message |
| NOTE: The value of this timer is network dependent. | | | | |

Table 10.2: Timers of Bridge management service – TSN AF side

| TIMER NUM. | TIMER VALUE | CAUSE OF START | NORMAL STOP | ON  THE 1st, 2nd, 3rd, 4th EXPIRY |
| --- | --- | --- | --- | --- |
| T150 | NOTE | Transmission of MANAGE BRIDGE COMMAND message | MANAGE BRIDGE COMPLETE message received | Retransmission of MANAGE BRIDGE PORT COMMAND message |
| NOTE: The value of this timer is network dependent. | | | | |

Table 10.3: Timers of Ethernet port management service – DS-TT side

| TIMER NUM. | TIMER VALUE | CAUSE OF START | NORMAL STOP | ON  THE 1st, 2nd, 3rd, 4th EXPIRY |
| --- | --- | --- | --- | --- |
| T35yy | NOTE | Transmission of ETHERNET PORT MANAGEMENT NOTIFY message | ETHERNET PORT MANAGEMENT NOTIFY ACK message received | Retransmission of ETHERNET PORT MANAGEMENT NOTIFY message |
| NOTE: The value of this timer is DS-TT dependent. | | | | |

Table 10. 4: Timers of Ethernet port management service – NW-TT side

| TIMER NUM. | TIMER VALUE | CAUSE OF START | NORMAL STOP | ON  THE 1st, 2nd, 3rd, 4th EXPIRY |
| --- | --- | --- | --- | --- |
| T35zz | NOTE | Transmission of ETHERNET PORT MANAGEMENT NOTIFY message | ETHERNET PORT MANAGEMENT NOTIFY ACK message received | Retransmission of ETHERNET PORT MANAGEMENT NOTIFY message |
| NOTE: The value of this timer is NW-TT dependent. | | | | |

Table 10.5: Timers of Bridge management service – NW-TT side

| TIMER NUM. | TIMER VALUE | CAUSE OF START | NORMAL STOP | ON  THE 1st, 2nd, 3rd, 4th EXPIRY |
| --- | --- | --- | --- | --- |
| T350 | NOTE | Transmission of BRIDGE MANAGEMENT NOTIFY message | BRIDGE MANAGEMENT NOTIFY ACK message received | Retransmission of BRIDGE MANAGEMENT NOTIFY message |
| NOTE: The value of this timer is NW-TT dependent. | | | | |

\*\*\* End change \*\*\*