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AMENDMENT 1
2023-02

Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks — Specific requirements —

Part 1CB: Frame replication and elimination for reliability

AMENDMENT 1: Information model, YANG data model, and management information base module

Technologies de l'information — Télécommunications et échange d'information entre systèmes — Réseaux locaux et métropolitains — Exigences spécifiques —

Partie 1CB: Duplication de trame et son élimination pour la fiabilité

AMENDEMENT 1: Modèle d'information, modèle de données YANG et module de base d'informations de gestion

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IEEE Std 802.1CBcv™-2021
(Amendment to IEEE Std 802.1CB™-2017)

IEEE Standard for
Local and metropolitan area networks—

Frame Replication and Elimination for Reliability

Amendment 1: Information Model, YANG Data Model, and Management Information Base Module

Developed by the

LAN/MAN Standards Committee
of the
IEEE Computer Society

Approved 8 December 2021

IEEE SA Standards Board

Abstract: This amendment specifies YANG data models and MIB modules that allow configuration and status reporting for bridges and end systems with the capabilities for Frame Replication and Elimination for Reliability (FRER) and Stream identification.

Keywords: Bridged Local Area Networks, Bridges, Bridging, Frame Elimination, Frame Replication, IEEE 802®, IEEE 802.1CB™, IEEE 802.1Q™, local area networks (LANs), MAC Bridges, Redundancy, Time-Sensitive Networking, TSN, Virtual Bridged Local Area Networks (virtual LANs)

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Introduction

This introduction is not part of IEEE Std 802.1CBcv-2021, IEEE Standard for Local and metropolitan area networks—Frame Replication and Elimination for Reliability—Amendment 1: Information Model, YANG Data Model, and Management Information Base Module.

This Standard defines an Information Model, a YANG Data Model, and a Management Information Base Module.

This standard contains state-of-the-art material. The area covered by this standard is undergoing evolution. Revisions are anticipated within the next few years to clarify existing material, to correct possible errors, and to incorporate new related material. Information on the current revision state of this and other IEEE 802 standards can be obtained from

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Contents

IEEE Standard for
Local and metropolitan area networks—

Frame Replication and Elimination for Reliability

Amendment 1: Information Model, YANG Data Model, and Management Information Base Module

(This amendment is based on IEEE Std 802.1CB™-2017.)

NOTE—The editing instructions contained in this amendment define how to merge the material contained therein into the existing base standard and its amendments to form the comprehensive standard.

The editing instructions are shown in ***bold italic***. Four editing instructions are used: change, delete, insert, and replace. ***Change*** is used to make corrections in existing text or tables. The editing instruction specifies the location of the change and describes what is being changed by using ~~strikethrough~~ (to remove old material) and underscore (to add new material). ***Delete*** removes existing material. ***Insert*** adds new material without disturbing the existing material. Deletions and insertions may require renumbering. If so, renumbering instructions are given in the editing instruction. ***Replace*** is used to make changes in figures or equations by removing the existing figure or equation and replacing it with a new one. Editing instructions, change markings, and this NOTE will not be carried over into future editions because the changes will be incorporated into the base standard.[6]

[6] Notes in text, tables, and figures are given for information only and do not contain requirements needed to implement the standard.

1. Overview

1.6 Introduction

Insert new text at the end of 1.6 as follows:

This standard also specifies a Unified Modeling Language (UML) based information model for the capabilities currently specified in Clause 9 and Clause 10 of this standard. A YANG data model and a Management Information Base (MIB) module, both based on that UML model, are provided in order to support configuration and status reporting.

2. Normative references

Insert the following references in alphanumeric order in Clause 2:

IETF RFC 2578 (STD 58), Structure of Management Information Version 2 (SMIv2), McCloghrie, K., D. Perkins, and J. Schoenwaelder, Apr. 1999.[7]

IETF RFC 2579 (STD 58), Textual Conventions for SMIv2, McCloghrie, K., D. Perkins, and J. Schoenwaelder, Apr. 1999.

IETF RFC 2580 (STD 58), Conformance Statements for SMIv2, McCloghrie, K., D. Perkins, and J. Schoenwaelder, Apr. 1999.

IETF RFC 3410, Introduction and Applicability Statements for Internet-Standard Management Framework, Case, J., R. Mundy, D. Partain, and B. Stewart, Dec. 2002.

IETF RFC 8343 (proposed standard), A YANG Data Model for Interface Management, Bjorklund, M., Mar. 2018.

[7] IETF RFCs are available from the Internet Engineering Task Force (https://www.rfc-archive.org/).

4. Acronyms and abbreviations

Insert the following abbreviations in alphanumeric order in Clause 4:

MIB	Management Information Base
NETCONF	Network Configuration Protocol
SMI	Structure of Management Information
SNMP	Simple Network Management Protocol
YANG	Yet Another Next Generation[8]
UML	Unified Modeling Language

[8] YANG is best viewed as a name, not an acronym

5. Conformance

5.8 Talker end system optional behaviors

Change list items f) and g) in 5.8 as follows:

f) The PRP sequence trailer (7.10);~~ and/or~~

g) Additional types of Sequence encode/decode functions~~.~~;

h) Support SMIv2 MIB modules for the management of talker end system functions (Clause 11) as required by item e in 5.6; and/or

i) Support YANG modules for the management of talker end system functions (Clause 12) as required by item e in 5.6.

5.11 Listener end system optional behaviors

Change list items g) and h) in 5.11 as follows:

g) Additional types of Sequence encode/decode functions;~~ and/or~~

h) At least two instances of Individual recovery functions (7.5), each using the VectorRecoveryAlgorithm (7.4.3.4)~~.~~;

i) Support SMIv2 MIB modules for the management of listener end system functions (Clause 11) as required by item f in 5.9; and/or

j) Support YANG modules for the management of listener end system functions (Clause 12) as required by item f in 5.9.

5.14 Relay system optional behaviors

Change list items g) to j) in 5.14 as follows:

g) Additional types of Sequence encode/decode functions;~~ and/or~~

h) Some or all of the functions in 5.12 or 5.13 as both in- and out-facing functions~~.~~;

i) At least two instances of Individual recovery functions (7.5), each using the VectorRecoveryAlgorithm (7.4.3.4)~~.~~;

j) Autoconfiguration (7.11) and the associated managed objects (10.7)~~.~~;

k) Support SMIv2 MIB modules for the management of relay systems functions (Clause 11) as required by item g in 5.12; and/or

l) Support YANG modules for the management of relay systems functions (Clause 12) as required by item g in 5.12.

7. Frame Replication and Elimination for Reliability

7.4 Sequencing function

7.4.1 Sequence generation function

7.4.1.3 SequenceGenerationReset

Change 7.4.1.3 as follows:

The SequenceGenerationReset function is called whenever the BEGIN event occurs (item a in 7.4.1.1) or the value True is written to the ~~frerSeqRcvyReset~~frerSeqGenReset managed object (~~10.4.1.4~~10.3.1.3). It resets GenSeqNum (7.4.1.2.2) and increments frerCpsSeqGenResets (10.8.2).

```
void SequenceGenerationReset () {
   GenSeqNum = 0;
   frerCpsSeqGenResets = frerCpsSeqGenResets + 1;
}
```

10. Frame Replication and Elimination for Reliability management

10.3 Sequence generation table

10.3.1 frerSeqGenEntry

Insert subclause 10.3.1.3 after 10.3.1.2, as follows:

10.3.1.3 frerSeqGenReset

A Boolean object indicating that the Sequence generation function (7.4.1) is to be reset by calling its corresponding SequenceGenerationReset function (7.4.1.3). Writing the value True to frerSeqGenReset triggers a reset; writing the value False has no effect. When read, frerSeqGenReset always returns the value False.

Insert Clause 11 and Clause 12 after Clause 10 as follows:

11. Management Information Base (MIB)

This clause contains a complete SMIv2 MIB set for all features of this standard.

11.1 Internet Standard Management Framework

The MIBs in this standard are designed to operate in a manner consistent with the principles of the Internet Standard Management Framework, which describes the separation of a data modeling language (for example, SMIv2) from content-specific data models (for example, the LLDP remote systems MIB), and from messages and protocol operations used to manipulate the data (for example, SNMPv3).

For a detailed overview of the documents that describe the current Internet Standard Management Framework, please refer to section 7 of IETF RFC 3410 (2002).

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This clause specifies a MIB module that is compliant to the SMIv2, which is described in IETF RFC 2578 (STD 58), IETF RFC 2579 (STD 58), and IETF RFC 2580 (STD 58).

11.2 Structure of the MIB

The IEEE Std 802.1CB MIB is divided into a number of MIB modules. A summary of the modules contained in this clause is represented in Table 11-1. The general MIB table structures for the MIB modules contained in this clause are illustrated in Figure 11-1.

Table 11-1—Structure of the MIB modules

Module	Subclause	References	Notes
IEEE8021-STREAM-IDENTIFICATION-MIB	11.5.1	Clause 9	MIB model for Stream identification.
IEEE8021-FRER-MIB	11.5.2	Clause 10	MIB model for FRER.

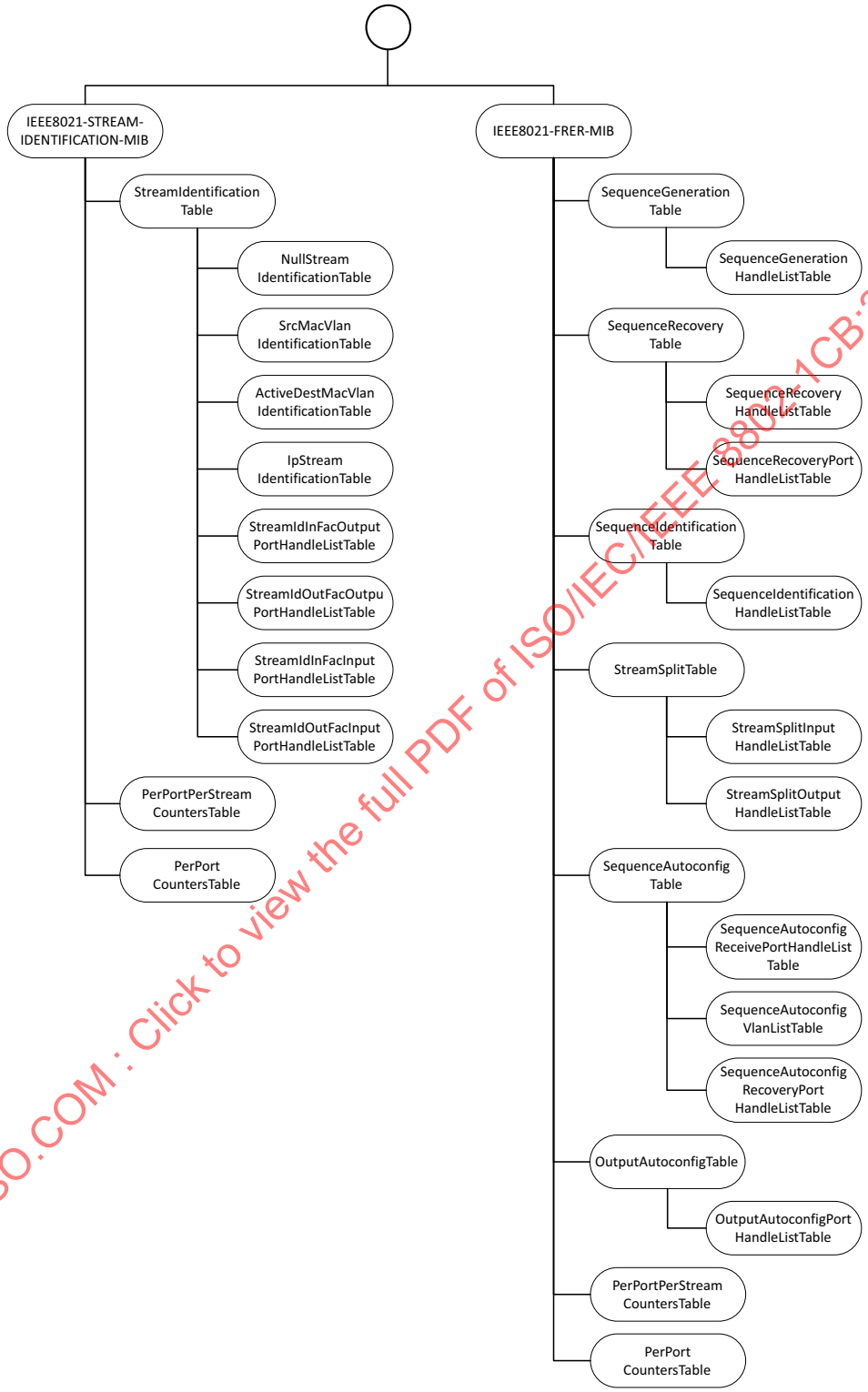

Figure 11-1—MIB modules structure

11.2.1 Structure of the IEEE8021-STREAM-IDENTIFICATION-MIB

The IEEE8021-STREAM-IDENTIFICATION-MIB module is divided into a number of branches (e.g., subtrees). Each subtree is organized as a set of related objects. Where appropriate, the corresponding Clause 9 management reference is also included.

Table 11-2 indicates the structure of the IEEE8021-STREAM-IDENTIFICATION-MIB module.

Table 11-2—IEEE8021-STREAM-IDENTIFICATION-MIB structure and relationship to this standard

Clause 11 MIB table/object	Reference
ieee8021StreamIdStreamIdentificationTable	9.1, 9.1.1
ieee8021StreamIdStreamIdentificationIndex	—
ieee8021StreamIdStreamIdIdentificationType	—
ieee8021StreamIdStreamIdIdentificationTypeOUI	—
ieee8021StreamIdStreamIdIdentificationCustomType	—
ieee8021StreamIdStreamIdIdentificationCustomTypeOUI	—
ieee8021StreamIdStreamIdIdentificationTypeSelect	—
ieee8021StreamIdStreamIdIdentificationTypeSelect	—
ieee8021StreamIdStreamIdInFacOutputPortList	—
ieee8021StreamIdStreamIdOutFacOutputPortList	—
ieee8021StreamIdStreamIdInFacInputPortList	—
ieee8021StreamIdStreamIdOutFacInputPortList	—
ieee8021StreamIdAutoConfigured	—
ieee8021StreamIdLanPathId	—
ieee8021StreamIdStatus	—
ieee8021StreamIdNullStreamIdentificationTable	9.1.2
ieee8021StreamIdCpeNullDownDestMac	—
ieee8021StreamIdCPENullDownTagged	—
ieee8021StreamIdCpeNullDownVlan	—
ieee8021StreamIdSrcMacVlanIdentificationTable	9.1.3
ieee8021StreamIdCpeSmacVlanDownSrcMac	—
ieee8021StreamIdCpeSmacVlanDownTagged	—
ieee8021StreamIdCpeSmacVlanDownVlan	—
ieee8021StreamIdActiveDestMacVlanIdentificationTable	9.1.4
ieee8021StreamIdCpeDmacVlanDownDestMac	—
ieee8021StreamIdCpeDmacVlanDownTagged	—

Table 11-2—IEEE8021-STREAM-IDENTIFICATION-MIB structure and relationship to this standard *(continued)*

Clause 11 MIB table/object	Reference
ieee8021StreamIdCpeDmacVlanDownVlan	—
ieee8021StreamIdCpeDmacVlanDownPriority	—
ieee8021StreamIdCpeDmacVlanUpDestMac	—
ieee8021StreamIdCpeDmacVlanUpTagged	—
ieee8021StreamIdCpeDmacVlanUpVlan	—
ieee8021StreamIdCpeDmacVlanUpPriority	—
Ieee8021StreamIdIpStreamIdentificationTable	9.1.5
ieee8021StreamIdCpeIpIdDestMac	—
ieee8021StreamIdCpeIpIdTagged	—
ieee8021StreamIdCpeIpIdVlan	—
ieee8021StreamIdCpeIpIdIpSourceType	—
ieee8021StreamIdCpeIpIdIpSource	—
ieee8021StreamIdCpeIpIdIpDestinationType	—
ieee8021StreamIdCpeIpIdIpDestination	—
ieee8021StreamIdCpeIpIdDscp	—
ieee8021StreamIdCpeIpIdNextProtocol	—
ieee8021StreamIdCpeIpIdSourcePort	—
ieee8021StreamIdCpeIpIdDestinationPort	—
ieee8021StreamIdStreamIdInFacOutputPortHandleListTable	9.1.1.2
ieee8021StreamIdStreamIdInFacOutputPortHandleListIndex	—
ieee8021StreamIdStreamIdInFacOutputPortHandle	—
ieee8021StreamIdStreamIdInFacOutputPortHandleListStatus	—
ieee8021StreamIdStreamIdOutFacOutputPortHandleListTable	9.1.1.3
ieee8021StreamIdStreamIdOutFacOutputPortHandleListIndex	—
ieee8021StreamIdStreamIdOutFacOutputPortHandle	—
ieee8021StreamIdStreamIdOutFacOutputPortHandleListStatus	—
ieee8021StreamIdStreamIdInFacInputPortHandleListTable	9.1.1.2
ieee8021StreamIdStreamIdInFacInputPortHandleListIndex	—
ieee8021StreamIdStreamIdInFacInputPortHandle	—
ieee8021StreamIdStreamIdInFacInputPortHandleListStatus	—
ieee8021StreamIdStreamIdOutFacInputPortHandleListTable	9.1.1.5

Table 11-2—IEEE8021-STREAM-IDENTIFICATION-MIB structure and relationship to this standard *(continued)*

Clause 11 MIB table/object	Reference
ieee8021StreamIdStreamIdOutFacInputPortHandleListIndex	—
ieee8021StreamIdStreamIdOutFacInputPortHandle	—
ieee8021StreamIdStreamIdOutFacInputPortHandleListStatus	—
ieee8021StreamIdPerPortPerStreamCountersTable	9.2
ieee8021StreamIdPerPortPerStreamDirection	—
ieee8021StreamIdPerPortPerStreamInputPackets	—
ieee8021StreamIdPerPortPerStreamOutputPackets	—
ieee8021StreamIdPerPortCountersTable	9.3
ieee8021StreamIdPerPortInputPackets	—
ieee8021StreamIdPerPortOutputPackets	—

11.2.2 Structure of the IEEE8021-FRER-MIB

The IEEE8021-FRER-MIB module is divided into a number of branches (e.g., subtrees). Each subtree is organized as a set of related objects. Where appropriate, the corresponding Clause 9 management reference is also included.

Table 11-3 indicates the structure of the IEEE8021-FRER-MIB module.

Table 11-3—IEEE8021-FRER-MIB structure and relationship to this standard

Clause 11 MIB table/object	Reference
ieee8021FrerSequenceGenerationTable	10.3
ieee8021FrerSequenceGenerationIndex	—
ieee8021FrerSequenceGenerationStreamList	—
ieee8021FrerSequenceGenerationDirection	—
ieee8021FrerSequenceGenerationReset	—
ieee8021FrerSequenceGenerationHandleListTable	10.3.1.1
ieee8021FrerSequenceGenerationHandleListIndex	—
ieee8021FrerSequenceGenerationStreamHandle	—
ieee8021FrerSequenceGenerationHandleListStatus	—
ieee8021FrerSequenceRecoveryTable	10.4
ieee8021FrerSequenceRecoveryIndex	—
ieee8021FrerSequenceRecoveryStreamList	—
ieee8021FrerSequenceRecoveryPortList	—

Table 11-3—IEEE8021-FRER-MIB structure and relationship to this standard *(continued)*

Clause 11 MIB table/object	Reference
ieee8021FrerSequenceRecoveryDirection	—
ieee8021FrerSequenceRecoveryReset	—
ieee8021FrerSequenceRecoveryAlgorithm	—
ieee8021FrerSequenceRecoveryAlgorithmOUI	—
ieee8021FrerSequenceCustomRecoveryAlgorithm	—
ieee8021FrerSequenceCustomRecoveryAlgorithmOUI	—
ieee8021FrerSequenceRecoveryHistoryLength	—
ieee8021FrerSequenceRecoveryResetMSec	—
ieee8021FrerSequenceRecoveryInvalidSequenceValue	—
ieee8021FrerSequenceRecoveryTakeNoSequence	—
ieee8021FrerSequenceRecoveryIndividualRecovery	—
ieee8021FrerSequenceRecoveryLatentErrorDetection	—
ieee8021FrerSequenceRecoveryLatentErrorDifference	—
ieee8021FrerSequenceRecoveryLatentErrorPeriod	—
ieee8021FrerSequenceRecoveryLatentErrorPaths	—
ieee8021FrerSequenceRecoveryLatentResetPeriod	—
ieee8021FrerSequenceRecoveryStatus	—
ieee8021FrerSequenceRecoveryHandleListTable	10.4.1.1
ieee8021FrerSequenceRecoveryHandleListIndex	—
ieee8021FrerSequenceRecoveryStreamHandle	—
ieee8021FrerSequenceRecoveryHandleListStatus	—
ieee8021FrerSequenceRecoveryPortHandleListTable	10.4.1.2
ieee8021FrerSequenceRecoveryPortHandleListIndex	—
ieee8021FrerSequenceRecoveryPortHandle	—
ieee8021FrerSequenceRecoveryPortHandleListStatus	—
ieee8021FrerSequenceIdentificationTable	10.5
ieee8021FrerSequenceIdentificationEncodePort	—
ieee8021FrerSequenceIdentificationEncodeDirection	—
ieee8021FrerSequenceIdentificationStreamList	—
ieee8021FrerSequenceIdentificationEncodeActive	—
ieee8021FrerSequenceIdentificationEncodeEncapsulationType	—
ieee8021FrerSequenceIdentificationEncodeEncapsulationOUI	—
ieee8021FrerSequenceIdentificationCustomEncodeEncapsulationType	—

Table 11-3—IEEE8021-FRER-MIB structure and relationship to this standard *(continued)*

Clause 11 MIB table/object	Reference
ieee8021FrerSequenceIdentificationCustomEncodeEncapsulationOUI	—
ieee8021FrerSequenceIdentificationEncodePathIdLanId	—
ieee8021FrerSequenceIdentificationStatus	—
ieee8021FrerSequenceIdentificationHandleListTable	10.5.1.1
ieee8021FrerSequenceIdentificationHandleListIndex	—
ieee8021FrerSequenceIdentificationStreamHandle	—
ieee8021FrerSequenceIdentificationHandleListStatus	—
ieee8021FrerStreamSplitTable	10.6
ieee8021FrerStreamSplitIndex	
ieee8021FrerStreamSplitPort	—
ieee8021FrerStreamSplitDirection	—
ieee8021FrerStreamSplitInputIdList	—
ieee8021FrerStreamSplitOutputIdList	—
ieee8021FrerStreamSplitInputHandleListTable	10.6.1.3
ieee8021FrerStreamSplitInputHandleListIndex	—
ieee8021FrerStreamSplitInputIdHandle	—
ieee8021FrerStreamSplitInputHandleListStatus	—
ieee8021FrerStreamSplitOutputHandleListTable	10.6.1.4
ieee8021FrerStreamSplitOutputHandleListIndex	—
ieee8021FrerStreamSplitOutputIdHandle	—
ieee8021FrerStreamSplitOutputHandleListStatus	—
ieee8021FrerSequenceAutoconfigTable	10.7, 10.7.1
ieee8021FrerSequenceAutoconfigIndex	—
ieee8021FrerSequenceAutoconfigSequenceEncapsulation	—
ieee8021FrerSequenceAutoconfigSequenceEncapsulationOUI	—
ieee8021FrerSequenceAutoconfigCustomSequenceEncapsulation	—
ieee8021FrerSequenceAutoconfigCustomSequenceEncOUI	—
ieee8021FrerSequenceAutoconfigReceivePortList	—
ieee8021FrerSequenceAutoconfigTagged	—
ieee8021FrerSequenceAutoconfigVlanList	—
ieee8021FrerSequenceAutoconfigRecoveryPortList	—
ieee8021FrerSequenceAutoconfigDestructMSec	—

Table 11-3—IEEE8021-FRER-MIB structure and relationship to this standard *(continued)*

Clause 11 MIB table/object	Reference
ieee8021FrerSequenceAutoconfigResetMSec	—
ieee8021FrerSequenceAutoconfigAlgorithm	—
ieee8021FrerSequenceAutoconfigAlgorithmOUI	—
ieee8021FrerSequenceAutoconfigCustomAlgorithm	—
ieee8021FrerSequenceAutoconfigCustomAlgorithmOUI	—
ieee8021FrerSequenceAutoconfigHistoryLength	—
ieee8021FrerSequenceAutoconfigCreateIndividual	—
ieee8021FrerSequenceAutoconfigCreateRecovery	—
ieee8021FrerSequenceAutoconfigLatentErrorDetection	—
ieee8021FrerSequenceAutoconfigLatentErrorDifference	—
ieee8021FrerSequenceAutoconfigLatentErrorPeriod	—
ieee8021FrerSequenceAutoconfigLatentErrorResetPeriod	—
ieee8021FrerSequenceAutoconfigStatus	—
ieee8021FrerSequenceAutoconfigReceivePortHandleListTable	10.7.1.1.2
ieee8021FrerSequenceAutoconfigReceivePortHandleListIndex	—
ieee8021FrerSequenceAutoconfigReceivePortHandle	—
ieee8021FrerSequenceAutoconfigReceivePortHandleListStatus	—
ieee8021FrerSequenceAutoconfigVlanListTable	10.7.1.1.4
ieee8021FrerSequenceAutoconfigVlanListIndex	—
ieee8021FrerSequenceAutoconfigVlan	—
ieee8021FrerSequenceAutoconfigVlanListStatus	—
ieee8021FrerSequenceAutoconfigRecoveryPortHandleListTable	10.7.1.1.5
ieee8021FrerSequenceAutoconfigRecoveryPortHandleListIndex	—
ieee8021FrerSequenceAutoconfigRecoveryPortHandle	—
ieee8021FrerSequenceAutoconfigRecoveryPortHandleListStatus	—
ieee8021FrerOutputAutoconfigTable	10.7, 10.7.2
ieee8021FrerOutputAutoconfigIndex	—
ieee8021FrerOutputAutoconfigPortList	—
ieee8021FrerOutputAutoconfigEncapsulation	—
ieee8021FrerOutputAutoconfigEncapsulationOUI	—
ieee8021FrerOutputAutoconfigCustomEncapsulation	—
ieee8021FrerOutputAutoconfigCustomEncapsulationOUI	—

Table 11-3—IEEE8021-FRER-MIB structure and relationship to this standard *(continued)*

Clause 11 MIB table/object	Reference
ieee8021FrerOutputAutoconfigLanPathId	—
ieee8021FrerOutputAutoconfigStatus	—
ieee8021FrerOutputAutoconfigPortHandleListTable	10.7.2.1.1
ieee8021FrerOutputAutoconfigPortHandleListIndex	—
ieee8021FrerOutputAutoconfigPortHandle	—
ieee8021FrerOutputAutoconfigPortHandleListStatus	—
ieee8021FrerPerPortPerStreamCountersTable	10.8
ieee8021FrerPerPortPerStreamDirection	—
ieee8021FrerPerPortPerStreamSeqGenResets	—
ieee8021FrerPerPortPerStreamSeqRecoveryOutOfOrderPackets	—
ieee8021FrerPerPortPerStreamSeqRecoveryRoguePackets	—
ieee8021FrerPerPortPerStreamSeqRecoveryPassedPackets	—
ieee8021FrerPerPortPerStreamSeqRecoveryDiscardedPackets	—
ieee8021FrerPerPortPerStreamSeqRecoveryLostPackets	—
ieee8021FrerPerPortPerStreamSeqRecoveryTaglessPackets	—
ieee8021FrerPerPortPerStreamSeqRecoveryResets	—
ieee8021FrerPerPortPerStreamSeqRecoveryLatentErrorResets	—
ieee8021FrerPerPortPerStreamSeqEncErroredPackets	—
ieee8021FrerPerPortCountersTable	10.9
ieee8021FrerPerPortSeqRecoveryPassedPackets	—
ieee8021FrerPerPortfrerCpSeqRecoveryDiscardPackets	—
ieee8021FrerPerPortfrerCpSeqEncErroredPackets	—

11.3 Relationship to other MIBs

In order to facilitate interoperable management of the features defined in this standard by remote means, 11.5 contains a complete set of SMIv2 MIB modules. This subclause describes how the MIB modules defined in this standard are related to the MIB modules that are imported.

11.3.1 Relationship of the IEEE8021-STREAM-IDENTIFICATION-MIB to other MIBs

The IEEE8021-STREAM-IDENTIFICATION-MIB identifies the interfaces for the counters provided by this standard by an ifIndex and therefore imports from the IF-MIB.

It also imports items from the SNMPv2-SMI, SNMPv2-TC, INET-ADDRESS-MIB, and IEEE8021-TC-MIB and requires SNMPv2-CONF for conformance.

11.3.2 Relationship of the IEEE8021-FRER-MIB to other MIBs

The IEEE8021-FRER-MIB identifies the interfaces for the counters provided by this standard by an ifIndex and therefore imports from the IF-MIB.

It also imports items from the IEEE8021-STREAM-IDENTIFICATION-MIB, SNMPv2-SMI, SNMPv2-TC, and IEEE8021-TC-MIB and requires SNMPv2-CONF for conformance.

11.4 Security considerations

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example, by using IPsec), there is no control about who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in these MIB modules.

It is recommended that implementers consider the security features as provided by the SNMPv3 framework (see IETF RFC 3410 (2002), section 8), including full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is not recommended. Instead, it is recommended to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of these MIB modules is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

11.4.1 Security considerations of the IEEE8021-STREAM-IDENTIFICATION-MIB

There are a number of management objects defined in the IEEE8021-STREAM-IDENTIFICATION-MIB module that have a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a nonsecure environment without proper protection can have a negative effect on network operations.

Some of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) may be considered sensitive or vulnerable in some network environments. It is thus important to control all types of access (including GET and/or NOTIFY) to these objects and possibly to even encrypt the values of these objects when sending them over the network via SNMP.

11.4.2 Security considerations of the IEEE8021-FRER-MIB

There are a number of management objects defined in the IEEE8021-STREAM-IDENTIFICATION-MIB module that have a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a nonsecure environment without proper protection can have a negative effect on network operations.

Some of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) may be considered sensitive or vulnerable in some network environments. It is thus important to control all types of access (including GET and/or NOTIFY) to these objects and possibly to even encrypt the values of these objects when sending them over the network via SNMP.

11.5 MIB modules[9, 10]

In this subclause, certain terms (e.g., “SHOULD” and “MUST”) denote requirements terminology according to the usage specified in IETF RFC 2119, as is customary for IETF MIB module definitions. In the MIB modules definitions below, if any discrepancy between the DESCRIPTION text and the corresponding definition in any other part of this standard occur, the definitions outside this subclause take precedence.

11.5.1 Definitions for the IEEE8021-STREAM-IDENTIFICATION-MIB

```
IEEE8021-STREAM-IDENTIFICATION-MIB DEFINITIONS ::= BEGIN

-- ============================================================
-- MIB for support of Stream identification of IEEE 802.1CB
-- Frame Replication and Elimination for Reliability
-- ============================================================

IMPORTS
    OBJECT-GROUP,
    MODULE-COMPLIANCE
        FROM SNMPv2-CONF
    MODULE-IDENTITY,
    OBJECT-TYPE,
    OBJECT-IDENTITY,
    Counter64,
    Unsigned32,
    Integer32
        FROM SNMPv2-SMI
    TEXTUAL-CONVENTION,
    TruthValue,
    RowStatus,
    MacAddress,
    AutonomousType,
    VariablePointer
        FROM SNMPv2-TC
    ifIndex
        FROM IF-MIB
    InetAddressType,
    InetAddress,
    InetPortNumber
        FROM INET-ADDRESS-MIB
    IEEE8021PriorityValue,
    ieee802dot1mibs
        FROM IEEE8021-TC-MIB
    ;

ieee8021StreamIdMib MODULE-IDENTITY
    LAST-UPDATED "202112080000Z" -- December 8, 2021
    ORGANIZATION "IEEE 802.1 Working Group"
    CONTACT-INFO
                "WG-URL: http://ieee802.org/1/
                WG-EMail: stds-802-1-l@ieee.org

    Contact: IEEE 802.1 Working Group Chair
    Postal: C/O IEEE 802.1 Working Group
            IEEE Standards Association
            445 Hoes Lane
            Piscataway, NJ 08854
            USA

    E-mail: stds-802-1-chairs@ieee.org"

    DESCRIPTION
```

[9] Copyright release for MIBs: Users of this standard may freely reproduce the MIBs contained in this subclause so that they can be used for their intended purpose.

[10] An ASCII version of the MIB modules are attached to the PDF version of this standard, and can be obtained by Web browser from the IEEE 802.1 Website at https://1.ieee802.org/mib-modules/.

```
        "The Management Information Base module for IEEE 802.1CB Stream
         identification. Unless otherwise indicated, the references in
         this MIB module are to IEEE Std 802.1CB-2017 as amended by
         IEEE Std 802.1CBcv-2021. Copyright (C) IEEE (2021).
         This version of this MIB module is part of IEEE Std 802.1CB-2021;
         see the standard itself for full legal notices."

    REVISION "202112080000Z" -- December 8, 2021
    DESCRIPTION
        "Initial revision published as part of IEEE Std 802.1CBcv-2021."

    ::= { ieee802dot1mibs 34 }

-- ================================================================
-- Textual Conventions
-- ================================================================

Ieee8021CBStreamIdentificationType ::= TEXTUAL-CONVENTION
    STATUS       current
    DESCRIPTION
        "An enumerated value indicating the method used to identify
         packets belonging to the Stream. The values 0-255 are reserved
         for use by IEEE 802."
    REFERENCE    "9.1.1.6 and Table 9-1"
    SYNTAX      INTEGER {
                    reserved(0),
                    nullStreamIdentification(1),
                    srcMacVlanStreamIdentification(2),
                    activeDstMacVlanStreamIdentification(3),
                    ipStreamStreamIdentification(4),
                    nonIEEESpecified(256)
                }

Ieee8021CBTaggedType ::= TEXTUAL-CONVENTION
    STATUS       current
    DESCRIPTION
        "An enumerated value indicating whether a packet in an EISS
         indication primitive to a Stream identification function is
         permitted to have a VLAN tag."
    REFERENCE    "9.1.2.2, 9.1.3.2, 9.1.4.2, 9.1.4.6, 9.1.5.2, and
                  10.7.1.1.3"
    SYNTAX      INTEGER {
                    tagged(1),
                    priority(2),
                    all(3)
                }

Ieee8021CBVlanIdentifier ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS       current
    DESCRIPTION
        "Specifies the vlan_identifier. A value of 0 indicates a special
         treatment, depending on the use of Ieee8021CBVlanIdentifier."
    SYNTAX      Integer32 (0|1..4094)

Ieee8021CBIpDscpType ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS   current
    DESCRIPTION
        "The code point used for discriminating a traffic
         Stream."
    SYNTAX      Integer32 (-1 | 0..63)

Ieee8021CBIdNextProtocolType ::= TEXTUAL-CONVENTION
    STATUS       current
    DESCRIPTION
        "An enumerated value indicating an IP next protocol."
    SYNTAX      INTEGER {
                    none(1),
                    udp(2),
                    tcp(3),
                    sctp(4)
```

```
                }

Ieee8021CBLanPathIdType ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS       current
    DESCRIPTION
        "An integer specifying a path or LAN. If and only if a packet
        matches an entry in the Sequence identification table that
        specifies HSR or PRP in its frerSeqEncEncapsType  object,
        tsnStreamIdLanPathId specifies the LanId or PathId value that
        must be matched for this tsnStreamIdEntry to apply. A value
        of -1 indicates that the LanId or PathId are to be ignored."
    REFERENCE    "10.22"
    SYNTAX      Integer32 (-1 | 0..15)

-- ============================================================
-- subtrees in the Stream identification MIB
-- ============================================================

ieee8021StreamIdNotifications
    OBJECT IDENTIFIER ::= { ieee8021StreamIdMib 0 }

ieee8021StreamIdObjects
    OBJECT IDENTIFIER ::= { ieee8021StreamIdMib 1 }

ieee8021StreamIdConformance
    OBJECT IDENTIFIER ::= { ieee8021StreamIdMib 2 }

ieee8021StreamIdStreamIdentification
    OBJECT IDENTIFIER ::= { ieee8021StreamIdObjects 1 }

ieee8021StreamIdStreamIdInFacOutputPortHandleList
    OBJECT IDENTIFIER ::= { ieee8021StreamIdObjects 2 }

ieee8021StreamIdStreamIdOutFacOutputPortHandleList
    OBJECT IDENTIFIER ::= { ieee8021StreamIdObjects 3 }

ieee8021StreamIdStreamIdInFacInputPortHandleList
    OBJECT IDENTIFIER ::= { ieee8021StreamIdObjects 4 }

ieee8021StreamIdStreamIdOutFacInputPortHandleList
    OBJECT IDENTIFIER ::= { ieee8021StreamIdObjects 5 }

ieee8021StreamIdPerPortPerStreamCounters
    OBJECT IDENTIFIER ::= { ieee8021StreamIdObjects 6 }

ieee8021StreamIdPerPortCounters
    OBJECT IDENTIFIER ::= { ieee8021StreamIdObjects 7 }

-- ============================================================
-- the ieee8021StreamIdStreamIdentification table
-- ============================================================

-- ============================================================
-- the ieee8021StreamIdStreamIdentificationTypes
-- ============================================================
ieee8021StreamIdStreamIdentificationTypes
    OBJECT IDENTIFIER ::= { ieee8021StreamIdStreamIdentification 1 }

ieee8021StreamIdNullStream OBJECT-IDENTITY
       STATUS current
       DESCRIPTION
           "The Stream identification type for the Null Stream
            identification."
       ::= { ieee8021StreamIdStreamIdentificationTypes 1 }

ieee8021StreamIdSrcMacVlan OBJECT-IDENTITY
       STATUS current
       DESCRIPTION
           "The Stream identification type for the Source MAC and VLAN
            Stream identification."
       ::= { ieee8021StreamIdStreamIdentificationTypes 2 }
```

```
ieee8021StreamIdActiveDestMacVlan OBJECT-IDENTITY
       STATUS current
       DESCRIPTION
           "The Stream identification type for the Active Destination
            and VLAN Stream identification."
       ::= { ieee8021StreamIdStreamIdentificationTypes 3 }

ieee8021StreamIdIpStream OBJECT-IDENTITY
       STATUS current
       DESCRIPTION
           "The Stream identification type for the IP Stream
            identification."
       ::= { ieee8021StreamIdStreamIdentificationTypes 4 }

-- ================================================================
-- the ieee8021StreamIdStreamIdentification
-- ================================================================

ieee8021StreamIdStreamIdentificationTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021StreamIdStreamIdentificationEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a set of tsnStreamIdEntry objects each
         relating to a single Stream, specifying the points in the
         system where Stream identification functions are to be
         instantiated."
    REFERENCE   "9.1"
    ::= { ieee8021StreamIdStreamIdentification 2 }

ieee8021StreamIdStreamIdentificationEntry OBJECT-TYPE
    SYNTAX      Ieee8021StreamIdStreamIdentificationEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of managed objects, all applying to the Stream specified
        by tsnStreamIdHandle, and all using the same Stream
        identification types and parameters."
    REFERENCE   "9.1.1"
    INDEX  { ieee8021StreamIdStreamIdentificationIndex }
    ::= { ieee8021StreamIdStreamIdentificationTable 1 }

Ieee8021StreamIdStreamIdentificationEntry ::=
    SEQUENCE {
        ieee8021StreamIdStreamIdentificationIndex
            Unsigned32,
        ieee8021StreamIdStreamIdIdentificationType
            Ieee8021CBStreamIdentificationType,
        ieee8021StreamIdStreamIdIdentificationTypeOUI
            OCTET STRING,
        ieee8021StreamIdStreamIdIdentificationCustomType
            Integer32,
        ieee8021StreamIdStreamIdIdentificationCustomTypeOUI
            OCTET STRING,
        ieee8021StreamIdStreamIdIdentificationTypeSelect
            AutonomousType,
        ieee8021StreamIdStreamIdHandle
            Unsigned32,
        ieee8021StreamIdStreamIdInFacOutputPortList
            AutonomousType,
        ieee8021StreamIdStreamIdOutFacOutputPortList
            AutonomousType,
        ieee8021StreamIdStreamIdInFacInputPortList
            AutonomousType,
        ieee8021StreamIdStreamIdOutFacInputPortList
            AutonomousType,
        ieee8021StreamIdAutoConfigured
            TruthValue,
        ieee8021StreamIdLanPathId
            Ieee8021CBLanPathIdType,
        ieee8021StreamIdStatus
```

```
            RowStatus
    }

ieee8021StreamIdStreamIdentificationIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index for the Stream Identity table."
    ::= { ieee8021StreamIdStreamIdentificationEntry 1 }

ieee8021StreamIdStreamIdIdentificationType OBJECT-TYPE
    SYNTAX      Ieee8021CBStreamIdentificationType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object is an enumerated value indicating the
         method used to identify packets belonging to the Stream.
         If the value used is nonIEEESpecified(256), the managed objects
         ieee8021StreamIdStreamIdIdentificationCustomType and
         ieee8021StreamIdStreamIdIdentificationCustomTypeOUI are used to
         specify OUI/CID and the Stream identification method defined by
         the entity owning the OUI/CID."
    REFERENCE   "9.1.1.6"
    DEFVAL  { nullStreamIdentification }
    ::= { ieee8021StreamIdStreamIdentificationEntry 2 }

ieee8021StreamIdStreamIdIdentificationTypeOUI OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (3))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This managed object specifies the OUI/CID used together with
         the Stream identification method specified in
         ieee8021StreamIdStreamIdIdentificationType.
         It is used if and only if the value for
         ieee8021StreamIdStreamIdIdentificationType is in the range of
         0-255. In this case it always takes the value 00-80-C2."
    REFERENCE   "9.1.1.6"
    ::= { ieee8021StreamIdStreamIdentificationEntry 3 }

ieee8021StreamIdStreamIdIdentificationCustomType OBJECT-TYPE
    SYNTAX      Integer32 (256..2147483647)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object is an enumerated value indicating the
         method used to identify packets belonging to the Stream. It is
         used if and only if the value for
         ieee8021StreamIdStreamIdIdentificationType is 256."
    REFERENCE   "9.1.1.6"
    ::= { ieee8021StreamIdStreamIdentificationEntry 4 }

ieee8021StreamIdStreamIdIdentificationCustomTypeOUI OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (3))
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies the OUI/CID used together with
         the Stream identification method specified in
         ieee8021StreamIdStreamIdIdentificationType. It is used if and
         only if the value for
         ieee8021StreamIdStreamIdIdentificationType is 256."
    REFERENCE   "9.1.1.6"
    ::= { ieee8021StreamIdStreamIdentificationEntry 5 }

ieee8021StreamIdStreamIdIdentificationTypeSelect OBJECT-TYPE
    SYNTAX      AutonomousType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "An indication of the type of Stream identification method that
```

```
            is used.

            If this value is
            'ieee8021StreamIdNullStream  ieee8021StreamIdObjects 1' then
            an entry exists in the
            ieee8021StreamIdStreamIdentificationTable
            which corresponds to the Null Stream identification.

            If this value is
            'ieee8021StreamIdSrcMacVlan  ieee8021StreamIdObjects 2' then
            an entry exists in the
            ieee8021StreamIdStreamIdentificationTable
            which corresponds to the Source MAC and VLAN Stream
            identification.

            If this value is
            'ieee8021StreamIdActiveDestMacVlan  ieee8021StreamIdObjects 3'
            then an entry exists in the
            ieee8021StreamIdStreamIdentificationTable
            which corresponds to the Active Destination MAC and VLAN Stream
            identification.

            If this value is
            'ieee8021StreamIdIpStream  ieee8021StreamIdObjects 4' then
            an entry exists in the
            ieee8021StreamIdStreamIdentificationTable
            which corresponds to the IP Stream identification."
        ::= { ieee8021StreamIdStreamIdentificationEntry 6 }

    ieee8021StreamIdStreamIdHandle OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "The objects in a given entry of the Stream identity table are
             used to control packets whose stream_handle subparameter is
             equal to the entry's tsnStreamIdHandle object."
        REFERENCE   "9.1.1.1"
        ::= { ieee8021StreamIdStreamIdentificationEntry 7 }

    ieee8021StreamIdStreamIdInFacOutputPortList OBJECT-TYPE
        SYNTAX      AutonomousType
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The list of ports on which an in-facing Stream identification
             function using this identification method is to be placed for
             this Stream in the output (towards the system forwarding
             function) direction.
             For each port in this list, there exists an entry in the
             ieee8021StreamIdStreamIdInFacOutputPortHandleListTable."
        REFERENCE   "9.1.1.2"
        ::= { ieee8021StreamIdStreamIdentificationEntry 8 }

    ieee8021StreamIdStreamIdOutFacOutputPortList OBJECT-TYPE
        SYNTAX      AutonomousType
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The list of ports on which an out-facing Stream identification
             function using this identification method is to be placed for
             this Stream in the output (towards the physical interface)
             direction.
             For each port in this list, there exists an entry in the
             ieee8021StreamIdStreamIdOutFacOutputPortHandleListTable."
        REFERENCE   "9.1.1.3"
        ::= { ieee8021StreamIdStreamIdentificationEntry 9 }

    ieee8021StreamIdStreamIdInFacInputPortList OBJECT-TYPE
        SYNTAX      AutonomousType
        MAX-ACCESS  read-only
        STATUS      current
```

```
    DESCRIPTION
        "The list of ports on which an in-facing Stream identification
         function using this identification method is to be placed for
         this Stream in the input (coming from the system forwarding
         function) direction.
         For each port in this list, there exists an entry in the
         ieee8021StreamIdStreamIdInFacInputPortHandleListTable."
    REFERENCE   "9.1.1.4"
    ::= { ieee8021StreamIdStreamIdentificationEntry 10 }

ieee8021StreamIdStreamIdOutFacInputPortList OBJECT-TYPE
    SYNTAX      AutonomousType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The list of ports on which an out-facing Stream identification
         function using this identification method is to be placed for
         this Stream in the input (coming from the physical interface)
         direction.
         For each port in this list, there exists an entry in the
         ieee8021StreamIdStreamIdOutFacInputPortHandleListTable."
    REFERENCE   "9.1.1.5"
    ::= { ieee8021StreamIdStreamIdentificationEntry 11 }

ieee8021StreamIdAutoConfigured OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A read-only Boolean value, supplied by the system, specifying
         whether this entry was created explicitly (False) or via the
         Sequence autoconfiguration table (True)."
    REFERENCE   "10.2.1"
    ::= { ieee8021StreamIdStreamIdentificationEntry 12 }

ieee8021StreamIdLanPathId OBJECT-TYPE
    SYNTAX      Ieee8021CBLanPathIdType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "An integer specifying a path or LAN. If and only if a packet
         matches an entry in the Sequence identification table that
         specifies HSR or PRP in its frerSeqEncEncapsType object,
         tsnStreamIdLanPathId specifies the LanId or PathId value that
         must be matched for this tsnStreamIdEntry to apply. A value
         of -1 indicates that the LanId or PathId are to be ignored."
    REFERENCE   "10.2.2"
    ::= { ieee8021StreamIdStreamIdentificationEntry 13 }

ieee8021StreamIdStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Row-Status for the Stream Identity table."
    ::= { ieee8021StreamIdStreamIdentificationEntry 14 }

-- ============================================================
-- the ieee8021StreamIdNullStreamIdentificationTable
-- ============================================================

ieee8021StreamIdNullStreamIdentificationTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021StreamIdNullStreamIdentificationEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a set of controlling parameters for the
         Null Stream identification method."
    REFERENCE   "9.1.2"
    ::= { ieee8021StreamIdStreamIdentification 3 }

ieee8021StreamIdNullStreamIdentificationEntry OBJECT-TYPE
```

```
        SYNTAX      Ieee8021StreamIdNullStreamIdentificationEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A set of managed objects that serve as the Stream
             identification parameters when using the Null Stream
             identification method."
        REFERENCE   "9.1.2"
        INDEX  { ieee8021StreamIdStreamIdentificationIndex }
        ::= { ieee8021StreamIdNullStreamIdentificationTable 1 }

    Ieee8021StreamIdNullStreamIdentificationEntry ::=
        SEQUENCE {
            ieee8021StreamIdCpeNullDownDestMac
                MacAddress,
            ieee8021StreamIdCPENullDownTagged
                Ieee8021CBTaggedType,
            ieee8021StreamIdCpeNullDownVlan
                Ieee8021CBVlanIdentifier
        }

    ieee8021StreamIdCpeNullDownDestMac OBJECT-TYPE
        SYNTAX      MacAddress
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "Specifies the destination_address that identifies a packet in
             an EISS indication primitive, to the Null Stream identification
             function."
        REFERENCE   "9.1.2.1"
        ::= { ieee8021StreamIdNullStreamIdentificationEntry 1 }

    ieee8021StreamIdCPENullDownTagged OBJECT-TYPE
        SYNTAX      Ieee8021CBTaggedType
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "An enumerated value indicating whether a packet in an EISS
             indication primitive to the Null Stream identification function
             is permitted to have a VLAN tag."
        REFERENCE   "9.1.2.2"
        ::= { ieee8021StreamIdNullStreamIdentificationEntry 2 }

    ieee8021StreamIdCpeNullDownVlan OBJECT-TYPE
        SYNTAX      Ieee8021CBVlanIdentifier
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "Specifies the vlan_identifier parameter that identifies a
             packet in an EISS indication primitive to the Null Stream
             identification function. A value of 0 indicates that the
             vlan_identifier parameter is ignored on EISS indication
             primitives."
        REFERENCE   "9.1.2.3"
        ::= { ieee8021StreamIdNullStreamIdentificationEntry 3 }

    -- ============================================================
    -- the ieee8021StreamIdSrcMacVlanIdentificationTable
    -- ============================================================

    ieee8021StreamIdSrcMacVlanIdentificationTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Ieee8021StreamIdSrcMacVlanIdentificationEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table containing a set of controlling parameters for the
             Source MAC and VLAN Stream identification method."
        REFERENCE   "9.1.3"
        ::= { ieee8021StreamIdStreamIdentification 4 }

    ieee8021StreamIdSrcMacVlanIdentificationEntry OBJECT-TYPE
        SYNTAX      Ieee8021StreamIdSrcMacVlanIdentificationEntry
```

```
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of managed objects that serve as the Stream
         identification parameters when using the Source MAC and VLAN
         Stream identification method."
    REFERENCE   "9.1.3"
    INDEX  { ieee8021StreamIdStreamIdentificationIndex }
    ::= { ieee8021StreamIdSrcMacVlanIdentificationTable 1 }

Ieee8021StreamIdSrcMacVlanIdentificationEntry ::=
    SEQUENCE {
        ieee8021StreamIdCpeSmacVlanDownSrcMac
            MacAddress,
        ieee8021StreamIdCpeSmacVlanDownTagged
            Ieee8021CBTaggedType,
        ieee8021StreamIdCpeSmacVlanDownVlan
            Ieee8021CBVlanIdentifier
    }

ieee8021StreamIdCpeSmacVlanDownSrcMac OBJECT-TYPE
    SYNTAX      MacAddress
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the source_address that identifies a packet in an
         EISS indication primitive, to the Source MAC and VLAN Stream
         identification function."
    REFERENCE   "9.1.3.1"
    ::= { ieee8021StreamIdSrcMacVlanIdentificationEntry 1 }

ieee8021StreamIdCpeSmacVlanDownTagged OBJECT-TYPE
    SYNTAX      Ieee8021CBTaggedType
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "An enumerated value indicating whether a packet in an EISS
         indication primitive to the Source MAC and VLAN Stream
         identification function is permitted to have a VLAN tag."
    REFERENCE   "9.1.3.2"
    ::= { ieee8021StreamIdSrcMacVlanIdentificationEntry 2 }

ieee8021StreamIdCpeSmacVlanDownVlan OBJECT-TYPE
    SYNTAX      Ieee8021CBVlanIdentifier
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the vlan_identifier parameter that identifies a
         packet in an EISS indication primitive to the Source MAC and
         VLAN Stream identification function. A value of 0 indicates
         that the vlan_identifier parameter is ignored on EISS
         indication primitives."
    REFERENCE   "9.1.3.3"
    ::= { ieee8021StreamIdSrcMacVlanIdentificationEntry 3 }

-- ============================================================
-- the ieee8021StreamIdActiveDestMacVlanIdentificationTable
-- ============================================================

ieee8021StreamIdActiveDestMacVlanIdentificationTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021StreamIdActiveDestMacVlanIdentificationEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a set of controlling parameters for the
         Active Destination MAC and VLAN Stream identification method."
    REFERENCE   "9.1.4"
    ::= { ieee8021StreamIdStreamIdentification 5 }

ieee8021StreamIdActiveDestMacVlanIdentificationEntry OBJECT-TYPE
    SYNTAX      Ieee8021StreamIdActiveDestMacVlanIdentificationEntry
    MAX-ACCESS  not-accessible
```

```
    STATUS      current
    DESCRIPTION
        "A set of managed objects that serve as the Stream
         identification parameters when using the Active Destination
         MAC and VLAN Stream identification method."
    REFERENCE   "9.1.4"
    INDEX  { ieee8021StreamIdStreamIdentificationIndex }
    ::= { ieee8021StreamIdActiveDestMacVlanIdentificationTable 1 }

Ieee8021StreamIdActiveDestMacVlanIdentificationEntry ::=
    SEQUENCE {
        ieee8021StreamIdCpeDmacVlanDownDestMac
            MacAddress,
        ieee8021StreamIdCpeDmacVlanDownTagged
            Ieee8021CBTaggedType,
        ieee8021StreamIdCpeDmacVlanDownVlan
            Ieee8021CBVlanIdentifier,
        ieee8021StreamIdCpeDmacVlanDownPriority
            IEEE8021PriorityValue,
        ieee8021StreamIdCpeDmacVlanUpDestMac
            MacAddress,
        ieee8021StreamIdCpeDmacVlanUpTagged
            Ieee8021CBTaggedType,
        ieee8021StreamIdCpeDmacVlanUpVlan
            Ieee8021CBVlanIdentifier,
        ieee8021StreamIdCpeDmacVlanUpPriority
            IEEE8021PriorityValue
    }

ieee8021StreamIdCpeDmacVlanDownDestMac OBJECT-TYPE
    SYNTAX      MacAddress
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the destination_address parameter to use in the
         EISS request primitive for output packets sent to lower layers
         by the Active Destination MAC and VLAN Stream identification
         function, and the destination_address that identifies an input
         packet in an EISS indication primitive to the Active
         Destination MAC and VLAN Stream identification function."
    REFERENCE   "9.1.4.1"
    ::= { ieee8021StreamIdActiveDestMacVlanIdentificationEntry 1 }

ieee8021StreamIdCpeDmacVlanDownTagged OBJECT-TYPE
    SYNTAX      Ieee8021CBTaggedType
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "An enumerated value indicating whether a packet in an EISS
         indication or request primitive between the Active Destination
         MAC and VLAN Stream identification function and the lower
         layers is to have a VLAN tag.
         This variable is not used in an FRER C-component."
    REFERENCE   "9.1.4.2"
    ::= { ieee8021StreamIdActiveDestMacVlanIdentificationEntry 2 }

ieee8021StreamIdCpeDmacVlanDownVlan OBJECT-TYPE
    SYNTAX      Ieee8021CBVlanIdentifier
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the vlan_identifier parameter to use in the EISS
         request primitive for output packets sent to lower layers by
         the Active Destination MAC and VLAN Stream identification
         function, and the vlan_identifier that identifies an input
         packet in an EISS indication primitive to the Active
         Destination MAC and VLAN Stream identification function.
         A value of 0 indicates that the vlan_identifier parameter is
         ignored on EISS indication primitives."
    REFERENCE   "9.1.4.3"
    ::= { ieee8021StreamIdActiveDestMacVlanIdentificationEntry 3 }
```

```
ieee8021StreamIdCpeDmacVlanDownPriority OBJECT-TYPE
    SYNTAX      IEEE8021PriorityValue
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the priority parameter to use in the EISS request
         primitive for output packets sent to lower layers by the Active
         Destination MAC and VLAN Stream identification function for all
         packets in a particular Stream."
    REFERENCE   "9.1.4.4"
    ::= { ieee8021StreamIdActiveDestMacVlanIdentificationEntry 4 }

ieee8021StreamIdCpeDmacVlanUpDestMac OBJECT-TYPE
    SYNTAX      MacAddress
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the destination_address parameter to use in the EISS
         indication primitive for input packets offered to upper layers
         by the Active Destination MAC and VLAN Stream identification
         layer. This address replaces the address that was used to
         identify the packet (tsnCpeDmacVlanDownDestMac)."
    REFERENCE   "9.1.4.5"
    ::= { ieee8021StreamIdActiveDestMacVlanIdentificationEntry 5 }

ieee8021StreamIdCpeDmacVlanUpTagged OBJECT-TYPE
    SYNTAX      Ieee8021CBTaggedType
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "An enumerated value indicating whether a packet in an EISS
         indication or request primitive between the Active Destination
         MAC and VLAN Stream identification function and the upper
         layers is to have a VLAN tag.
         This variable is used only by an end system and not by a
         relay system."
    REFERENCE   "9.1.4.6"
    ::= { ieee8021StreamIdActiveDestMacVlanIdentificationEntry 6 }

ieee8021StreamIdCpeDmacVlanUpVlan OBJECT-TYPE
    SYNTAX      Ieee8021CBVlanIdentifier
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the vlan_identifier parameter to use in the EISS
         indication primitive for packets offered to upper layers, or
         the VLAN ID field for an IEEE 802.1Q tag in an
         ISS mac_service_data_unit. This address replaces the VLAN ID
         that was used to identify the packet (tsnCpeDmacVlanDownVlan)."
    REFERENCE   "9.1.4.7"
    ::= { ieee8021StreamIdActiveDestMacVlanIdentificationEntry 7 }

ieee8021StreamIdCpeDmacVlanUpPriority OBJECT-TYPE
    SYNTAX      IEEE8021PriorityValue
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the priority parameter to use in the EISS indication
         primitive for packets offered to upper layers."
    REFERENCE   "9.1.4.8"
    ::= { ieee8021StreamIdActiveDestMacVlanIdentificationEntry 8 }

-- ================================================================
-- the ieee8021StreamIdIpStreamIdentificationTable
-- ================================================================

ieee8021StreamIdIpStreamIdentificationTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021StreamIdIpStreamIdentificationEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a set of controlling parameters for the
```

```
            IP Stream identification method."
        REFERENCE   "9.1.5"
        ::= { ieee8021StreamIdStreamIdentification 6 }

    ieee8021StreamIdIpStreamIdentificationEntry OBJECT-TYPE
        SYNTAX      Ieee8021StreamIdIpStreamIdentificationEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A set of managed objects that serve as the Stream
             identification parameters when using the IP Stream
             identification method."
        REFERENCE   "9.1.5"
        INDEX  { ieee8021StreamIdStreamIdentificationIndex }
        ::= { ieee8021StreamIdIpStreamIdentificationTable 1 }

    Ieee8021StreamIdIpStreamIdentificationEntry ::=
        SEQUENCE {
            ieee8021StreamIdCpeIpIdDestMac
                MacAddress,
            ieee8021StreamIdCpeIpIdTagged
                Ieee8021CBTaggedType,
            ieee8021StreamIdCpeIpIdVlan
                Ieee8021CBVlanIdentifier,
            ieee8021StreamIdCpeIpIdIpSourceType
                InetAddressType,
            ieee8021StreamIdCpeIpIdIpSource
                InetAddress,
            ieee8021StreamIdCpeIpIdIpDestinationType
                InetAddressType,
            ieee8021StreamIdCpeIpIdIpDestination
                InetAddress,
            ieee8021StreamIdCpeIpIdDscp
                Ieee8021CBIpDscpType,
            ieee8021StreamIdCpeIpIdNextProtocol
                Ieee8021CBIdNextProtocolType,
            ieee8021StreamIdCpeIpIdSourcePort
                InetPortNumber,
            ieee8021StreamIdCpeIpIdDestinationPort
                InetPortNumber
        }

    ieee8021StreamIdCpeIpIdDestMac OBJECT-TYPE
        SYNTAX      MacAddress
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "Specifies the destination_address parameter that identifies a
             packet in an EISS indication primitive."
        REFERENCE   "9.1.5.1"
        ::= { ieee8021StreamIdIpStreamIdentificationEntry 1 }

    ieee8021StreamIdCpeIpIdTagged OBJECT-TYPE
        SYNTAX      Ieee8021CBTaggedType
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "An enumerated value indicating whether a packet in an EISS
             indication or request primitive to the IP Stream identification
             function is to have a VLAN tag."
        REFERENCE   "9.1.5.2"
        ::= { ieee8021StreamIdIpStreamIdentificationEntry 2 }

    ieee8021StreamIdCpeIpIdVlan OBJECT-TYPE
        SYNTAX      Ieee8021CBVlanIdentifier
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "Specifies the vlan_identifier parameter that identifies a
             packet in an EISS indication primitive. A value of 0 indicates
             that the frame is not to have a VLAN tag."
        REFERENCE   "9.1.5.3"
```

```
    ::= { ieee8021StreamIdIpStreamIdentificationEntry 3 }

ieee8021StreamIdCpeIpIdIpSourceType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the type of the source address parameter supplied
         in ieee8021StreamIdCpeIpIdIpSource."
    REFERENCE   "9.1.5.4"
    ::= { ieee8021StreamIdIpStreamIdentificationEntry 4 }

ieee8021StreamIdCpeIpIdIpSource OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the IPv4 (RFC 791) or IPv6 (RFC 2460) source address
         parameter that must be matched to identify packets coming up
         from lower layers. An address of all 0 indicates that the
         IP source address is to be ignored on packets received from
         lower layers."
    REFERENCE   "9.1.5.4"
    ::= { ieee8021StreamIdIpStreamIdentificationEntry 5 }

ieee8021StreamIdCpeIpIdIpDestinationType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the type of the destination address parameter
         supplied in ieee8021StreamIdCpeIpIdIpDestination."
    REFERENCE   "9.1.5.4"
    ::= { ieee8021StreamIdIpStreamIdentificationEntry 6 }

ieee8021StreamIdCpeIpIdIpDestination OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the IPv4 (RFC 791) or IPv6 (RFC 2460) destination
        address parameter that must be matched to identify packets
        coming up from lower layers."
    REFERENCE   "9.1.5.5"
    ::= { ieee8021StreamIdIpStreamIdentificationEntry 7 }

ieee8021StreamIdCpeIpIdDscp OBJECT-TYPE
    SYNTAX      Ieee8021CBIpDscpType
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the IPv4 (RFC 791) or IPv6 (RFC 2460) differentiated
         services codepoint (DSCP, RFC 2474) that must be matched to
         identify packets coming up from the lower layers. A value of
         64 decimal indicates that the DSCP is to be ignored on packets
         received from lower layers."
    REFERENCE   "9.1.5.6"
    ::= { ieee8021StreamIdIpStreamIdentificationEntry 8 }

ieee8021StreamIdCpeIpIdNextProtocol OBJECT-TYPE
    SYNTAX      Ieee8021CBIdNextProtocolType
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the IP next protocol parameter that must be matched
         to identify packets coming up from lower layers. The value of
         this parameter must specify either none, UDP (RFC 768),
         TCP (RFC 793), or SCTP (RFC 4960). If 'none', then the
         tsnCpeIpIdSourcePort and tsnCpeIpIdDestinationPort managed
         objects are not used."
    REFERENCE   "9.1.5.7"
    ::= { ieee8021StreamIdIpStreamIdentificationEntry 9 }
```

```
ieee8021StreamIdCpeIpIdSourcePort OBJECT-TYPE
    SYNTAX      InetPortNumber
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the TCP or UDP Source Port parameter that must be
         matched to identify packets coming up from lower layers.
         A value of 0 indicates that the Source Port number of the
         packet is to be ignored on packets received from lower layers."
    REFERENCE   "9.1.5.8"
    ::= { ieee8021StreamIdIpStreamIdentificationEntry 10 }

ieee8021StreamIdCpeIpIdDestinationPort OBJECT-TYPE
    SYNTAX      InetPortNumber
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies the TCP or UDP Destination Port parameter that must
         be matched to identify packets coming up from lower layers.
         A value of 0 indicates that the Destination Port number of the
         packet is to be ignored on packets received from lower layers."
    REFERENCE   "9.1.5.9"
    ::= { ieee8021StreamIdIpStreamIdentificationEntry 11 }

-- ============================================================
-- the ieee8021StreamIdStreamIdInFacOutputPortHandleList
-- table
-- ============================================================
ieee8021StreamIdStreamIdInFacOutputPortHandleListTable OBJECT-TYPE
    SYNTAX     SEQUENCE OF Ieee8021StreamIdStreamIdInFacOutputPortHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a list of ports on which an in-facing Stream
         identification function using this identification method is to
         be placed for this Stream in the output (towards the system
         forwarding function) direction, referenced in
         ieee8021StreamIdStreamIdentificationIndex."
    REFERENCE   "9.1.1.2"
    ::= { ieee8021StreamIdStreamIdInFacOutputPortHandleList 2 }

ieee8021StreamIdStreamIdInFacOutputPortHandleListEntry OBJECT-TYPE
    SYNTAX      Ieee8021StreamIdStreamIdInFacOutputPortHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of managed objects providing the ports on which an
         in-facing Stream identification function using this
         identification method is to be placed for this Stream in the
         output (towards the system forwarding function) direction,
         referenced in ieee8021StreamIdStreamIdentificationIndex."
    REFERENCE   "9.1.1.2"
    INDEX     { ieee8021StreamIdStreamIdentificationIndex,
                ieee8021StreamIdStreamIdInFacOutputPortHandleListIndex
              }
    ::= { ieee8021StreamIdStreamIdInFacOutputPortHandleListTable 1 }

Ieee8021StreamIdStreamIdInFacOutputPortHandleListEntry ::=
    SEQUENCE {
        ieee8021StreamIdStreamIdInFacOutputPortHandleListIndex
            Unsigned32,
        ieee8021StreamIdStreamIdInFacOutputPortHandle
            VariablePointer,
        ieee8021StreamIdStreamIdInFacOutputPortHandleListStatus
            RowStatus
    }

ieee8021StreamIdStreamIdInFacOutputPortHandleListIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
```

```
    DESCRIPTION
        "Index for the In-Facing Output Port handle list table."
    ::= { ieee8021StreamIdStreamIdInFacOutputPortHandleListEntry 1 }

ieee8021StreamIdStreamIdInFacOutputPortHandle OBJECT-TYPE
    SYNTAX      VariablePointer
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "A pointer to an interface that is an element of the
         ieee8021StreamIdStreamIdInFacOutputPortList instance in the
         ieee8021StreamIdStreamIdentificationTable."
    REFERENCE   "9.1.1.2"
    ::= { ieee8021StreamIdStreamIdInFacOutputPortHandleListEntry 2 }

ieee8021StreamIdStreamIdInFacOutputPortHandleListStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Row-Status for the In-Facing Output Port handle list table."
    ::= { ieee8021StreamIdStreamIdInFacOutputPortHandleListEntry 3 }

-- ================================================================
-- the ieee8021StreamIdStreamIdOutFacOutputPortList
-- table
-- ================================================================
ieee8021StreamIdStreamIdOutFacOutputPortHandleListTable OBJECT-TYPE
   SYNTAX     SEQUENCE OF Ieee8021StreamIdStreamIdOutFacOutputPortHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a list of ports on which an out-facing
         Stream identification function using this identification method
         is to be placed for this Stream in the output (towards the
         system forwarding function) direction, referenced in
         ieee8021StreamIdStreamIdentificationIndex."
    REFERENCE   "9.1.1.3"
    ::= { ieee8021StreamIdStreamIdOutFacOutputPortHandleList 3 }

ieee8021StreamIdStreamIdOutFacOutputPortHandleListEntry OBJECT-TYPE
    SYNTAX      Ieee8021StreamIdStreamIdOutFacOutputPortHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of managed objects providing the ports on which an
         out-facing Stream identification function using this
         identification method is to be placed for this Stream in the
         output (towards the system forwarding function) direction,
         referenced in ieee8021StreamIdStreamIdentificationIndex."
    REFERENCE   "9.1.1.3"
    INDEX   { ieee8021StreamIdStreamIdentificationIndex,
              ieee8021StreamIdStreamIdOutFacOutputPortHandleListIndex
            }
    ::= { ieee8021StreamIdStreamIdOutFacOutputPortHandleListTable 1 }

Ieee8021StreamIdStreamIdOutFacOutputPortHandleListEntry ::=
    SEQUENCE {
        ieee8021StreamIdStreamIdOutFacOutputPortHandleListIndex
            Unsigned32,
        ieee8021StreamIdStreamIdOutFacOutputPortHandle
            VariablePointer,
        ieee8021StreamIdStreamIdOutFacOutputPortHandleListStatus
            RowStatus
    }

ieee8021StreamIdStreamIdOutFacOutputPortHandleListIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index for the Out-Facing Output Port handle list table."
```

```
    ::= { ieee8021StreamIdStreamIdOutFacOutputPortHandleListEntry 1 }

ieee8021StreamIdStreamIdOutFacOutputPortHandle OBJECT-TYPE
    SYNTAX      VariablePointer
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "A pointer to an interface that is an element of the
         ieee8021StreamIdStreamIdOutFacOutputPortList instance in the
         ieee8021StreamIdStreamIdentificationTable."
    REFERENCE   "9.1.1.3"
    ::= { ieee8021StreamIdStreamIdOutFacOutputPortHandleListEntry 2 }

ieee8021StreamIdStreamIdOutFacOutputPortHandleListStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Row-Status for the Out-Facing Output Port handle list table."
    ::= { ieee8021StreamIdStreamIdOutFacOutputPortHandleListEntry 3 }

-- ================================================================
-- the ieee8021StreamIdStreamIdInFacInputPortList
-- table
-- ================================================================
ieee8021StreamIdStreamIdInFacInputPortHandleListTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021StreamIdStreamIdInFacInputPortHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a list of ports on which an in-facing Stream
         identification function using this identification method is to
         be placed for this Stream in the input (coming from the system
         forwarding function) direction, referenced in
         ieee8021StreamIdStreamIdentificationIndex."
    REFERENCE   "9.1.1.4"
    ::= { ieee8021StreamIdStreamIdInFacInputPortHandleList 4 }

ieee8021StreamIdStreamIdInFacInputPortHandleListEntry OBJECT-TYPE
    SYNTAX      Ieee8021StreamIdStreamIdInFacInputPortHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of managed objects providing the ports on which an
         in-facing Stream identification function using this
         identification method is to be placed for this Stream in the
         input (coming from the system forwarding function) direction,
         referenced in ieee8021StreamIdStreamIdentificationIndex."
    REFERENCE   "9.1.1.4"
    INDEX   { ieee8021StreamIdStreamIdentificationIndex,
              ieee8021StreamIdStreamIdInFacInputPortHandleListIndex
            }
    ::= { ieee8021StreamIdStreamIdInFacInputPortHandleListTable 1 }

Ieee8021StreamIdStreamIdInFacInputPortHandleListEntry ::=
    SEQUENCE {
        ieee8021StreamIdStreamIdInFacInputPortHandleListIndex
            Unsigned32,
        ieee8021StreamIdStreamIdInFacInputPortHandle
            VariablePointer,
        ieee8021StreamIdStreamIdInFacInputPortHandleListStatus
            RowStatus
    }

ieee8021StreamIdStreamIdInFacInputPortHandleListIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index for the In-Facing Input Port handle list table."
    ::= { ieee8021StreamIdStreamIdInFacInputPortHandleListEntry 1 }
```

```
ieee8021StreamIdStreamIdInFacInputPortHandle OBJECT-TYPE
    SYNTAX      VariablePointer
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "A pointer to an interface that is an element of the
         ieee8021StreamIdStreamIdOutFacInputPortList instance in the
         ieee8021StreamIdStreamIdentificationTable."
    REFERENCE   "9.1.1.4"
    ::= { ieee8021StreamIdStreamIdInFacInputPortHandleListEntry 2 }

ieee8021StreamIdStreamIdInFacInputPortHandleListStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Row-Status for the In-Facing Input Port handle list table."
    ::= { ieee8021StreamIdStreamIdInFacInputPortHandleListEntry 3 }

-- ================================================================
-- the ieee8021StreamIdStreamIdOutFacInputPortList
-- table
-- ================================================================
ieee8021StreamIdStreamIdOutFacInputPortHandleListTable OBJECT-TYPE
    SYNTAX     SEQUENCE OF Ieee8021StreamIdStreamIdOutFacInputPortHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a list of ports on which an out-facing
         Stream identification function using this identification method
         is to be placed for this Stream in the input (coming from the
         physical interface) direction, referenced in
         ieee8021StreamIdStreamIdentificationIndex."
    REFERENCE   "9.1.1.5"
    ::= { ieee8021StreamIdStreamIdOutFacInputPortHandleList 5 }

ieee8021StreamIdStreamIdOutFacInputPortHandleListEntry OBJECT-TYPE
    SYNTAX      Ieee8021StreamIdStreamIdOutFacInputPortHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of managed objects providing the ports on which an
         out-facing Stream identification function using this
         identification method is to be placed for this Stream in the
         input (coming from the physical interface) direction,
         referenced in ieee8021StreamIdStreamIdentificationIndex."
    REFERENCE   "9.1.1.5"
    INDEX   { ieee8021StreamIdStreamIdentificationIndex,
              ieee8021StreamIdStreamIdOutFacInputPortHandleListIndex
            }
    ::= { ieee8021StreamIdStreamIdOutFacInputPortHandleListTable 1 }

Ieee8021StreamIdStreamIdOutFacInputPortHandleListEntry ::=
    SEQUENCE {
        ieee8021StreamIdStreamIdOutFacInputPortHandleListIndex
            Unsigned32,
        ieee8021StreamIdStreamIdOutFacInputPortHandle
            VariablePointer,
        ieee8021StreamIdStreamIdOutFacInputPortHandleListStatus
            RowStatus
    }

ieee8021StreamIdStreamIdOutFacInputPortHandleListIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index for the Out-Facing Input Port handle list table."
    ::= { ieee8021StreamIdStreamIdOutFacInputPortHandleListEntry 1 }

ieee8021StreamIdStreamIdOutFacInputPortHandle OBJECT-TYPE
    SYNTAX      VariablePointer
```

```
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "A pointer to an interface that is an element of the
         ieee8021StreamIdStreamIdOutFacInputPortList instance in the
         ieee8021StreamIdStreamIdentificationTable."
    REFERENCE   "9.1.1.5"
    ::= { ieee8021StreamIdStreamIdOutFacInputPortHandleListEntry 2 }

ieee8021StreamIdStreamIdOutFacInputPortHandleListStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Row-Status for the Out-Facing Input Port handle list table."
    ::= { ieee8021StreamIdStreamIdOutFacInputPortHandleListEntry 3 }

-- ================================================================
-- the ieee8021StreamIdPerPortPerStreamCountersTable
-- ================================================================

ieee8021StreamIdPerPortPerStreamCountersTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021StreamIdPerPortPerStreamCountersEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
            "A table containing a set of counters for Stream
             identification that are instantiated per port, Stream, and
             direction."
    REFERENCE   "9.2"
    ::= { ieee8021StreamIdPerPortPerStreamCounters 6 }

ieee8021StreamIdPerPortPerStreamCountersEntry OBJECT-TYPE
    SYNTAX      Ieee8021StreamIdPerPortPerStreamCountersEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
            "A set of managed objects for Stream identification
             counters that are instantiated per port, Stream, and
             direction."
    REFERENCE   "9.2"
     INDEX  { ifIndex,
              ieee8021StreamIdStreamIdHandle,
              ieee8021StreamIdPerPortPerStreamDirection
            }
    ::= { ieee8021StreamIdPerPortPerStreamCountersTable 1 }

Ieee8021StreamIdPerPortPerStreamCountersEntry ::=
    SEQUENCE {
        ieee8021StreamIdPerPortPerStreamDirection
            TruthValue,
        ieee8021StreamIdPerPortPerStreamInputPackets
            Counter64,
        ieee8021StreamIdPerPortPerStreamOutputPackets
            Counter64
    }

ieee8021StreamIdPerPortPerStreamDirection OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A managed object specifying the facing of a given Stream
         on a port. The Stream can be either in-facing (False) or
         out-facing (True)."
    REFERENCE   "9.2"
    ::= { ieee8021StreamIdPerPortPerStreamCountersEntry 1 }

ieee8021StreamIdPerPortPerStreamInputPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
```

```
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         for each packet identified by the Stream identification
         function."
    REFERENCE   "9.2.1"
    ::= { ieee8021StreamIdPerPortPerStreamCountersEntry 2 }

ieee8021StreamIdPerPortPerStreamOutputPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         for each packet passed down the stack by the Stream
         identification function."
    REFERENCE   "9.2.2"
    ::= { ieee8021StreamIdPerPortPerStreamCountersEntry 3 }

-- ================================================================
-- the ieee8021StreamIdPerPortCountersTable
-- ================================================================

ieee8021StreamIdPerPortCountersTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021StreamIdPerPortCountersEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
            "A table containing a set of counters for Stream
             identification that are instantiated per port and
             direction."
    REFERENCE   "9.3"
    ::= { ieee8021StreamIdPerPortCounters 7 }

ieee8021StreamIdPerPortCountersEntry OBJECT-TYPE
    SYNTAX      Ieee8021StreamIdPerPortCountersEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
            "A a set of managed objects for Stream identification
             counters that are instantiated per port and direction."
    REFERENCE   "9.3"
     INDEX  { ifIndex }
    ::= { ieee8021StreamIdPerPortCountersTable 1 }

Ieee8021StreamIdPerPortCountersEntry ::=
    SEQUENCE {
        ieee8021StreamIdPerPortInputPackets
            Counter64,
        ieee8021StreamIdPerPortOutputPackets
            Counter64
    }

ieee8021StreamIdPerPortInputPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         for each packet identified by any Stream identification
         function on this port. Its value equals the sum (modulo the
         size of the counters) of all of the
         ieee8021StreamIdPerPortPerStreamInputPackets counters on this
         same port."
    REFERENCE   "9.3.1"
    ::= { ieee8021StreamIdPerPortCountersEntry 1 }

ieee8021StreamIdPerPortOutputPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
```

```
            for each packet passed down the stack by any Stream
            identification function on this port. Its value equals the sum
            (modulo the size of the counters) of all of the
            ieee8021StreamIdPerPortPerStreamOutputPackets counters on this
            same port."
        REFERENCE   "9.3.2"
        ::= { ieee8021StreamIdPerPortCountersEntry 2 }

-- ================================================================
-- IEEE802 STREAM IDENTIFICATION MIB - Conformance Information
-- ================================================================

ieee8021StreamIdCompliances
    OBJECT IDENTIFIER ::= { ieee8021StreamIdConformance 1 }
ieee8021StreamIdGroups
    OBJECT IDENTIFIER ::= { ieee8021StreamIdConformance 2 }

-- ================================================================
-- units of conformance
-- ================================================================

-- ================================================================
-- the ieee8021StreamIdStreamIdentification group
-- ================================================================

ieee8021StreamIdStreamIdentificationGroup OBJECT-GROUP
    OBJECTS {
        ieee8021StreamIdStreamIdIdentificationTypeSelect,
        ieee8021StreamIdStreamIdIdentificationType,
        ieee8021StreamIdStreamIdIdentificationTypeOUI,
        ieee8021StreamIdStreamIdIdentificationCustomType,
        ieee8021StreamIdStreamIdIdentificationCustomTypeOUI,
        ieee8021StreamIdStreamIdHandle,
        ieee8021StreamIdStreamIdInFacOutputPortList,
        ieee8021StreamIdStreamIdOutFacOutputPortList,
        ieee8021StreamIdStreamIdInFacInputPortList,
        ieee8021StreamIdStreamIdOutFacInputPortList,
        ieee8021StreamIdStreamIdInFacOutputPortHandle,
        ieee8021StreamIdStreamIdInFacOutputPortHandleListStatus,
        ieee8021StreamIdStreamIdOutFacOutputPortHandle,
        ieee8021StreamIdStreamIdOutFacOutputPortHandleListStatus,
        ieee8021StreamIdStreamIdInFacInputPortHandle,
        ieee8021StreamIdStreamIdInFacInputPortHandleListStatus,
        ieee8021StreamIdStreamIdOutFacInputPortHandle,
        ieee8021StreamIdStreamIdOutFacInputPortHandleListStatus
    }
    STATUS      current
    DESCRIPTION
        "Objects that are part of the Stream identification."
    ::= { ieee8021StreamIdGroups 1 }

-- ================================================================
-- the ieee8021StreamIdNullStreamIdentification group
-- ================================================================

ieee8021StreamIdNullStreamIdentificationGroup OBJECT-GROUP
    OBJECTS {
        ieee8021StreamIdCpeNullDownDestMac,
        ieee8021StreamIdCPENullDownTagged,
        ieee8021StreamIdCpeNullDownVlan
    }
    STATUS      current
    DESCRIPTION
        "Objects that are part of the null Stream identification
         method."
    ::= { ieee8021StreamIdGroups 2 }

-- ================================================================
-- the ieee8021StreamIdSrcMacVlanIdentification group
-- ================================================================

ieee8021StreamIdSrcMacVlanIdentificationGroup OBJECT-GROUP
```

```
    OBJECTS {
        ieee8021StreamIdCpeSmacVlanDownSrcMac,
        ieee8021StreamIdCpeSmacVlanDownTagged,
        ieee8021StreamIdCpeSmacVlanDownVlan
    }
    STATUS      current
    DESCRIPTION
        "Objects that are part of the Source MAC and VLAN Stream
         identification method."
    ::= { ieee8021StreamIdGroups 3 }

-- ============================================================
-- the ieee8021StreamIdActiveDestMacVlanIdentification group
-- ============================================================

ieee8021StreamIdActiveDestMacVlanIdentificationGroup OBJECT-GROUP
    OBJECTS {
        ieee8021StreamIdCpeDmacVlanDownDestMac,
        ieee8021StreamIdCpeDmacVlanDownTagged,
        ieee8021StreamIdCpeDmacVlanDownVlan,
        ieee8021StreamIdCpeDmacVlanDownPriority,
        ieee8021StreamIdCpeDmacVlanUpDestMac,
        ieee8021StreamIdCpeDmacVlanUpTagged,
        ieee8021StreamIdCpeDmacVlanUpVlan,
        ieee8021StreamIdCpeDmacVlanUpPriority
    }
    STATUS      current
    DESCRIPTION
        "Objects that are part of the Active Destination MAC and
         VLAN Stream identification method."
    ::= { ieee8021StreamIdGroups 4 }

-- ============================================================
-- the ieee8021StreamIdIpStreamIdentification group
-- ============================================================

ieee8021StreamIdIpStreamIdentificationGroup OBJECT-GROUP
    OBJECTS {
        ieee8021StreamIdCpeIpIdDestMac,
        ieee8021StreamIdCpeIpIdTagged,
        ieee8021StreamIdCpeIpIdVlan,
        ieee8021StreamIdCpeIpIdIpSourceType,
        ieee8021StreamIdCpeIpIdIpSource,
        ieee8021StreamIdCpeIpIdIpDestinationType,
        ieee8021StreamIdCpeIpIdIpDestination,
        ieee8021StreamIdCpeIpIdDscp,
        ieee8021StreamIdCpeIpIdNextProtocol,
        ieee8021StreamIdCpeIpIdSourcePort,
        ieee8021StreamIdCpeIpIdDestinationPort
    }
    STATUS      current
    DESCRIPTION
        "Objects that are part of the IP Stream identification method."
    ::= { ieee8021StreamIdGroups 5 }

-- ============================================================
-- the ieee8021StreamIdAutoConfiguration group
-- ============================================================

ieee8021StreamIdAutoConfigurationGroup OBJECT-GROUP
    OBJECTS {
        ieee8021StreamIdAutoConfigured,
        ieee8021StreamIdLanPathId,
        ieee8021StreamIdStatus
    }
    STATUS      current
    DESCRIPTION
        "Objects that are used if auto configuration for Streams is
        used."
    ::= { ieee8021StreamIdGroups 6 }

-- ============================================================
```

```
-- the ieee8021StreamIdPerPortPerStreamCounters group
-- ================================================================

ieee8021StreamIdPerPortPerStreamCountersGroup OBJECT-GROUP
    OBJECTS {
        ieee8021StreamIdPerPortPerStreamInputPackets,
        ieee8021StreamIdPerPortPerStreamOutputPackets
    }
    STATUS      current
    DESCRIPTION
        "Objects that provide information on the count of packets
         handled by Stream identification per port, Stream, and
         direction ."
    ::= { ieee8021StreamIdGroups 7 }

-- ================================================================
-- the ieee8021StreamIdPerPortCounters group
-- ================================================================

ieee8021StreamIdPerPortCountersGroup OBJECT-GROUP
    OBJECTS {
        ieee8021StreamIdPerPortInputPackets,
        ieee8021StreamIdPerPortOutputPackets
    }
    STATUS      current
    DESCRIPTION
        "Objects that provide information on the count of packets
         handled by Stream identification per port and direction."
    ::= { ieee8021StreamIdGroups 8 }

-- ================================================================
-- compliance statements
-- ================================================================

ieee8021StreamIdCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "The compliance statement for devices supporting
        Stream identification."

    MODULE -- this module
        MANDATORY-GROUPS {
            ieee8021StreamIdStreamIdentificationGroup,
            ieee8021StreamIdNullStreamIdentificationGroup,
            ieee8021StreamIdSrcMacVlanIdentificationGroup,
            ieee8021StreamIdActiveDestMacVlanIdentificationGroup,
            ieee8021StreamIdIpStreamIdentificationGroup,
            ieee8021StreamIdPerPortPerStreamCountersGroup,
            ieee8021StreamIdPerPortCountersGroup
        }

        GROUP ieee8021StreamIdAutoConfigurationGroup
        DESCRIPTION
            "Implementation of this group is mandatory if the
             auto configuration feature is implemented."

    ::= { ieee8021StreamIdCompliances 1 }

END
```

11.5.2 Definitions for the IEEE8021-FRER-MIB

```
IEEE8021-FRER-MIB DEFINITIONS ::= BEGIN

-- ================================================================
-- MIB for support of frame replication and elimination of
-- IEEE 802.1CB Frame Replication and Elimination for Reliability
-- ================================================================

IMPORTS
```

```
    OBJECT-GROUP,
    MODULE-COMPLIANCE
        FROM SNMPv2-CONF
    MODULE-IDENTITY,
    OBJECT-TYPE,
    Counter64,
    Unsigned32,
    Integer32
        FROM SNMPv2-SMI
    TEXTUAL-CONVENTION,
    TruthValue,
    RowStatus,
    AutonomousType,
    VariablePointer
        FROM SNMPv2-TC
    ifIndex,
    InterfaceIndex
        FROM IF-MIB
    ieee802dot1mibs
        FROM IEEE8021-TC-MIB
    Ieee8021CBTaggedType,
    Ieee8021CBVlanIdentifier,
    Ieee8021CBLanPathIdType,
    ieee8021StreamIdStreamIdHandle
        FROM IEEE8021-STREAM-IDENTIFICATION-MIB
    ;

ieee8021FrerMib MODULE-IDENTITY
    LAST-UPDATED "202112080000Z" -- December 8, 2021
    ORGANIZATION "IEEE 802.1 Working Group"
    CONTACT-INFO
                "WG-URL: http://ieee802.org/1/
                WG-EMail: stds-802-1-l@ieee.org

    Contact: IEEE 802.1 Working Group Chair
    Postal: C/O IEEE 802.1 Working Group
            IEEE Standards Association
            445 Hoes Lane
            Piscataway, NJ 08854
            USA

    E-mail: stds-802-1-chairs@ieee.org"

    DESCRIPTION
        "The Management Information Base module for IEEE 802.1CB Stream
         identification. Unless otherwise indicated, the references in
         this MIB module are to IEEE Std 802.1CB-2017 as amended by
         IEEE Std 802.1CBcv-2021. Copyright (C) IEEE (2021).
         This version of this MIB module is part of IEEE Std 802.1CB-2021;
         see the standard itself for full legal notices."

    REVISION "202112080000Z" -- December 8, 2021
    DESCRIPTION
        "Initial revision published as part of IEEE Std 802.1CBcv-2021."

    ::= { ieee802dot1mibs 35 }

-- ================================================================
-- Textual Conventions
-- ================================================================

Ieee8021CBSequenceRecoveryAlgorithm ::= TEXTUAL-CONVENTION
    STATUS       current
    DESCRIPTION
        "An enumerated value specifying which sequence recovery
         algorithm is to be used for this instance of the Sequence
         recovery function. The enumeration uses an OUI or CID as shown
         in Table 10-1. If the value used is in the range of 0-255,
         the OUI used is 00-80-C2.
         The values 0 and 2-255 are reserved for use by IEEE 802."
    REFERENCE    "10.4.1.5 and Table 10-1"
    SYNTAX      INTEGER {
```

```
                    vectorAlgorithm(0),
                    matchAlgorithm(1),
                    nonIEEESpecified(256)
                }

Ieee8021CBSequenceEncodeDecodeType ::= TEXTUAL-CONVENTION
    STATUS       current
    DESCRIPTION
        "An enumerated value indicating the type of encapsulation used
         for this instance of the Sequence encode/decode function. The
         enumeration uses an OUI or CID as shown in Table 10-2. If the
         value used is in the range of 0-255, the OUI used is 00-80-C2.
         The values 0 and 4-255 are reserved for use by IEEE 802."
    REFERENCE    "10.5.1.5 and Table 10-2"
    SYNTAX      INTEGER {
                    reserved(0),
                    rTAG(1),
                    hsrSequenceTag(2),
                    prpSequenceTag(3),
                    nonIEEESpecified(256)
                }

-- ================================================================
-- subtrees in the FRER MIB
-- ================================================================

ieee8021FrerNotifications
    OBJECT IDENTIFIER ::= { ieee8021FrerMib 0 }

ieee8021FrerObjects
    OBJECT IDENTIFIER ::= { ieee8021FrerMib 1 }

ieee8021FrerConformance
    OBJECT IDENTIFIER ::= { ieee8021FrerMib 2 }

ieee8021FrerSequenceGeneration
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 1 }

ieee8021FrerSequenceGenerationHandleList
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 2 }

ieee8021FrerSequenceRecovery
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 3 }

ieee8021FrerSequenceRecoveryHandleList
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 4 }

ieee8021FrerSequenceRecoveryPortHandleList
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 5 }

ieee8021FrerSequenceIdentification
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 6 }

ieee8021FrerSequenceIdentificationHandleList
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 7 }

ieee8021FrerStreamSplit
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 8 }

ieee8021FrerStreamSplitInputHandleList
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 9 }

ieee8021FrerStreamSplitOutputHandleList
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 10 }

ieee8021FrerSequenceAutoconfig
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 11 }

ieee8021FrerSequenceAutoconfigReceivePortHandleList
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 12 }

ieee8021FrerSequenceAutoconfigVlanHandleList
```

```
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 13 }

ieee8021FrerSequenceAutoconfigRecoveryPortHandleList
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 14 }

ieee8021FrerOutputAutoconfig
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 15 }

ieee8021FrerOutputAutoconfigPortHandleList
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 16 }

ieee8021FrerPerPortPerStreamCounters
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 17 }

ieee8021FrerPerPortCounters
    OBJECT IDENTIFIER ::= { ieee8021FrerObjects 18 }

-- ============================================================
-- the ieee8021FrerSequenceGeneration table
-- ============================================================

ieee8021FrerSequenceGenerationTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021FrerSequenceGenerationEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a set of sequence generation entry objects.
         There is one entry for each sequence generation function."
    REFERENCE   "10.3"
    ::= { ieee8021FrerSequenceGeneration 1 }

ieee8021FrerSequenceGenerationEntry OBJECT-TYPE
    SYNTAX      Ieee8021FrerSequenceGenerationEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of managed objects that manage the Streams and direction
         for which a single instance of the Sequence generation function
         is to be placed."
    REFERENCE   "10.3.1"
    INDEX  { ieee8021FrerSequenceGenerationIndex }
    ::= { ieee8021FrerSequenceGenerationTable 1 }

Ieee8021FrerSequenceGenerationEntry ::=
    SEQUENCE {
        ieee8021FrerSequenceGenerationIndex
            Unsigned32,
        ieee8021FrerSequenceGenerationStreamList
            AutonomousType,
        ieee8021FrerSequenceGenerationDirection
            TruthValue,
        ieee8021FrerSequenceGenerationReset
            TruthValue

    }

ieee8021FrerSequenceGenerationIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index for the Sequence Generation table."
    ::= { ieee8021FrerSequenceGenerationEntry 1 }

ieee8021FrerSequenceGenerationStreamList OBJECT-TYPE
    SYNTAX      AutonomousType
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "A list of stream_handle values, corresponding to the values of
         the tsnStreamIdHandle objects in the Stream identity table,
         on which this instance of the Sequence generation function
```

```
            is to operate.
            The single instance of the Sequence generation function created
            by this frerSeqGenEntry operates every packet belonging to this
            Stream, regardless of the port on which it is received.
            For each instance of the Sequence generation function present
            in the ieee8021FrerSequenceGenerationTable there exists a list
            of stream_handle values in the
            ieee8021FrerSequenceGenerationHandleListTable."
        REFERENCE   "10.3.1.1"
        ::= { ieee8021FrerSequenceGenerationEntry 2 }

    ieee8021FrerSequenceGenerationDirection OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "This managed object indicates whether the Sequence generation
             function is to be placed on the out-facing (True) or
             in-facing (False) side of the port."
        REFERENCE   "10.3.1.2"
        ::= { ieee8021FrerSequenceGenerationEntry 3 }

    ieee8021FrerSequenceGenerationReset OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "This managed object indicates that the Sequence generation
             function is to be reset by calling its corresponding
             SequenceGenerationReset function. Writing the value True to
             this managed object triggers a reset; writing the value False
             has no effect. When read, this managed object always returns
             the value False."
        REFERENCE   "10.3.1.3"
        ::= { ieee8021FrerSequenceGenerationEntry 4 }

    -- ================================================================
    -- the ieee8021FrerSequenceGenerationHandleList table
    -- ================================================================

    ieee8021FrerSequenceGenerationHandleListTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Ieee8021FrerSequenceGenerationHandleListEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table containing a list of stream_handle values,
             corresponding to the values of the tsnStreamIdHandle objects in
             the Stream identity table, on which the instance of the
             Sequence generation function referenced in
             ieee8021FrerSequenceGenerationIndex is to operate.
             The single instance of the Sequence generation function created
             by the ieee8021FrerSequenceGenerationEntry referenced operates
             every packet belonging to this Stream, regardless of the port
             on which it is received."
        REFERENCE   "10.3.1.1"
        ::= { ieee8021FrerSequenceGenerationHandleList 2 }

    ieee8021FrerSequenceGenerationHandleListEntry OBJECT-TYPE
        SYNTAX      Ieee8021FrerSequenceGenerationHandleListEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A set of managed objects providing the stream_handle values
             corresponding to the values of the tsnStreamIdHandle objects in
             the Stream identity table, on which the instance of the
             Sequence generation function referenced in
             ieee8021FrerSequenceGenerationIndex is to operate."
        REFERENCE   "10.3.1.1"
        INDEX   { ieee8021FrerSequenceGenerationIndex,
                  ieee8021FrerSequenceGenerationHandleListIndex
                }
        ::= { ieee8021FrerSequenceGenerationHandleListTable 1 }
```

```
Ieee8021FrerSequenceGenerationHandleListEntry ::=
    SEQUENCE {
        ieee8021FrerSequenceGenerationHandleListIndex
            Unsigned32,
        ieee8021FrerSequenceGenerationStreamHandle
            VariablePointer,
        ieee8021FrerSequenceGenerationHandleListStatus
            RowStatus
    }

ieee8021FrerSequenceGenerationHandleListIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index for the Sequence Generation handle list table."
    ::= { ieee8021FrerSequenceGenerationHandleListEntry 1 }

ieee8021FrerSequenceGenerationStreamHandle OBJECT-TYPE
    SYNTAX      VariablePointer
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "A pointer to the ieee8021StreamIdStreamIdHandle that is an
         element of the ieee8021FrerSequenceGenerationStreamList
         instance in the ieee8021StreamIdStreamIdentificationTable."
    REFERENCE   "10.3.1.1"
    ::= { ieee8021FrerSequenceGenerationHandleListEntry 2 }

ieee8021FrerSequenceGenerationHandleListStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Row-Status for the Sequence Generation handle list table."
    ::= { ieee8021FrerSequenceGenerationHandleListEntry 3 }

-- ================================================================
-- the ieee8021FrerSequenceRecovery table
-- ================================================================

ieee8021FrerSequenceRecoveryTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021FrerSequenceRecoveryEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a set of managed objects for the single
         instance of a Base recovery function and Latent error detection
         function included in the Sequence recovery function or
         Individual recovery function."
    REFERENCE   "10.4"
    ::= { ieee8021FrerSequenceRecovery 3 }

ieee8021FrerSequenceRecoveryEntry OBJECT-TYPE
    SYNTAX      Ieee8021FrerSequenceRecoveryEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of managed objects listing the Streams, ports, and
         direction for which instances of a Sequence recovery function
         or Individual recovery function are to be instantiated."
    REFERENCE   "10.4.1"
    INDEX  { ieee8021FrerSequenceRecoveryIndex }
    ::= { ieee8021FrerSequenceRecoveryTable 1 }

Ieee8021FrerSequenceRecoveryEntry ::=
    SEQUENCE {
        ieee8021FrerSequenceRecoveryIndex
            Unsigned32,
        ieee8021FrerSequenceRecoveryStreamList
            AutonomousType,
```

```
        ieee8021FrerSequenceRecoveryPortList
            AutonomousType,
        ieee8021FrerSequenceRecoveryDirection
            TruthValue,
        ieee8021FrerSequenceRecoveryReset
            TruthValue,
        ieee8021FrerSequenceRecoveryAlgorithm
            Ieee8021CBSequenceRecoveryAlgorithm,
        ieee8021FrerSequenceRecoveryAlgorithmOUI
            OCTET STRING,
        ieee8021FrerSequenceCustomRecoveryAlgorithm
            Integer32,
        ieee8021FrerSequenceCustomRecoveryAlgorithmOUI
            OCTET STRING,
        ieee8021FrerSequenceRecoveryHistoryLength
            Integer32,
        ieee8021FrerSequenceRecoveryResetMSec
            Unsigned32,
        ieee8021FrerSequenceRecoveryInvalidSequenceValue
            Unsigned32,
        ieee8021FrerSequenceRecoveryTakeNoSequence
            TruthValue,
        ieee8021FrerSequenceRecoveryIndividualRecovery
            TruthValue,
        ieee8021FrerSequenceRecoveryLatentErrorDetection
            TruthValue,
        ieee8021FrerSequenceRecoveryLatentErrorDifference
            Integer32,
        ieee8021FrerSequenceRecoveryLatentErrorPeriod
            Integer32,
        ieee8021FrerSequenceRecoveryLatentErrorPaths
            Integer32,
        ieee8021FrerSequenceRecoveryLatentResetPeriod
            Integer32,
        ieee8021FrerSequenceRecoveryStatus
            RowStatus
    }

ieee8021FrerSequenceRecoveryIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index for the Sequence Recovery table."
    ::= { ieee8021FrerSequenceRecoveryEntry 1 }

ieee8021FrerSequenceRecoveryStreamList OBJECT-TYPE
    SYNTAX      AutonomousType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "A list of the stream_handle values, corresponding to the values
         of the tsnStreamIdHandle objects in the Stream identity table
         to which the system is to apply the instance of the Sequence
         recovery function or Individual recovery function.
         For each entry in the ieee8021FrerSequenceRecoveryTable
         there exists a list of stream_handle values in the
         ieee8021FrerSequenceRecoveryHandleListTable."
    REFERENCE   "10.4.1.1"
    ::= { ieee8021FrerSequenceRecoveryEntry 2 }

ieee8021FrerSequenceRecoveryPortList OBJECT-TYPE
    SYNTAX      AutonomousType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The list of ports on each of which the system is to instantiate
         the Sequence recovery function, or from which received packets
         are to be fed to a single instance of the Individual recovery
         function.
         For each entry in the ieee8021FrerSequenceRecoveryTable
         there exists a list of ports in the
```

```
            ieee8021FrerSequenceRecoveryPortHandleListTable."
        REFERENCE    "10.4.1.2"
        ::= { ieee8021FrerSequenceRecoveryEntry 3 }

    ieee8021FrerSequenceRecoveryDirection OBJECT-TYPE
        SYNTAX       TruthValue
        MAX-ACCESS   read-create
        STATUS       current
        DESCRIPTION
            "This managed object indicates whether the Sequence recovery
             function or Individual recovery function is to be placed on the
             out-facing (True) or in-facing (False) side of the port."
        REFERENCE    "10.4.1.3"
        ::= { ieee8021FrerSequenceRecoveryEntry 4 }

    ieee8021FrerSequenceRecoveryReset OBJECT-TYPE
        SYNTAX       TruthValue
        MAX-ACCESS   read-create
        STATUS       current
        DESCRIPTION
            "This managed object indicates that the Sequence recovery
             function or Individual recovery function is to be reset by
             calling its corresponding SequenceGenerationReset function.
             Writing the value True to ieee8021FrerSequenceRecoveryReset
             triggers a reset; writing the value False has no effect.
             When read, ieee8021FrerSequenceRecoveryReset always returns
             the value False."
        REFERENCE    "10.4.1.4"
        ::= { ieee8021FrerSequenceRecoveryEntry 5 }

    ieee8021FrerSequenceRecoveryAlgorithm OBJECT-TYPE
        SYNTAX       Ieee8021CBSequenceRecoveryAlgorithm
        MAX-ACCESS   read-create
        STATUS       current
        DESCRIPTION
            "This managed object is an enumerated value specifying which
             sequence recovery algorithm is to be used for this instance of
             the Sequence recovery function. If the value used is
             nonIEEESpecified(256), the managed objects
             ieee8021FrerSequenceCustomRecoveryAlgorithmOUI and
             ieee8021FrerSequenceCustomRecoveryAlgorithm are used to specify
             OUI/CID and the recovery algorithm defined by the entity owning
             the OUI/CID."
        REFERENCE    "10.4.1.5"
        DEFVAL  { vectorAlgorithm }
        ::= { ieee8021FrerSequenceRecoveryEntry 6 }

    ieee8021FrerSequenceRecoveryAlgorithmOUI OBJECT-TYPE
        SYNTAX       OCTET STRING (SIZE (3))
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "This managed object specifies the OUI/CID used together with
             the sequence recovery algorithm type specified in
             ieee8021FrerSequenceRecoveryAlgorithm.
             It is used if and only if the value for
             ieee8021FrerSequenceRecoveryAlgorithm is in the range of 0-255.
             In this case it always takes the value 00-80-C2."
        REFERENCE    "10.4.1.5"
        ::= { ieee8021FrerSequenceRecoveryEntry 7 }

    ieee8021FrerSequenceCustomRecoveryAlgorithm OBJECT-TYPE
        SYNTAX       Integer32 (256..2147483647)
        MAX-ACCESS   read-create
        STATUS       current
        DESCRIPTION
            "This managed object is an enumerated value specifying which
             sequence recovery algorithm is to be used for this instance of
             the Sequence recovery function. This managed object is used if
             and only if the value for ieee8021FrerSequenceRecoveryAlgorithm
             is 256."
        REFERENCE    "10.4.1.5"
```

```
    ::= { ieee8021FrerSequenceRecoveryEntry 8 }

ieee8021FrerSequenceCustomRecoveryAlgorithmOUI OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (3))
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies the OUI/CID used together with
         the sequence recovery algorithm type specified in
         ieee8021FrerSequenceRecoveryAlgorithm. It is used if and only
         if the value for ieee8021FrerSequenceRecoveryAlgorithm is 256."
    REFERENCE   "10.4.1.5"
    ::= { ieee8021FrerSequenceRecoveryEntry 9 }

ieee8021FrerSequenceRecoveryHistoryLength OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies how many bits of the
         SequenceHistory variable are to be used. The minimum and the
         default value is 2, maximum is the maximum allowed by the
         implementation. It is not used if the value for
         ieee8021FrerSequenceRecoveryAlgorithm is 1."
    REFERENCE   "10.4.1.6"
    ::= { ieee8021FrerSequenceRecoveryEntry 10 }

ieee8021FrerSequenceRecoveryResetMSec OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies the timeout period in
         milliseconds for the RECOVERY_TIMEOUT event."
    REFERENCE   "10.4.1.7"
    ::= { ieee8021FrerSequenceRecoveryEntry 11 }

ieee8021FrerSequenceRecoveryInvalidSequenceValue OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This managed object specifies a value that cannot be encoded in
         a packet as a value for the sequence_number subparameter,
         i.e., ieee8021FrerSequenceRecoveryInvalidSequenceValue is
         larger than or equal to the value specified in RecovSeqSpace."
    REFERENCE   "10.4.1.8 and 7.4.3.2.1"
    ::= { ieee8021FrerSequenceRecoveryEntry 12 }

ieee8021FrerSequenceRecoveryTakeNoSequence OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies whether packets with no
         sequence_number subparameter are to be accepted (True) or
         not (False)."
    REFERENCE   "10.4.1.9"
    DEFVAL  { false }
    ::= { ieee8021FrerSequenceRecoveryEntry 13 }

ieee8021FrerSequenceRecoveryIndividualRecovery OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies whether this entry describes a
         Sequence recovery function (False) or Individual recovery
         function (True)."
    REFERENCE   "10.4.1.10"
    ::= { ieee8021FrerSequenceRecoveryEntry 14 }
```

```
ieee8021FrerSequenceRecoveryLatentErrorDetection OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object indicates whether an instance of the
         Latent error detection function is to be instantiated along
         with the Base recovery function in this recovery function.
         It cannot be set True if
         ieee8021FrerSequenceRecoveryIndividualRecovery is also True;
         an Individual recovery function does not include a Latent
         error detection function."
    REFERENCE   "10.4.1.11"
    ::= { ieee8021FrerSequenceRecoveryEntry 15 }

ieee8021FrerSequenceRecoveryLatentErrorDifference OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies the maximum difference between
         ieee8021FrerPerPortPerStreamSeqRecoveryDiscardedPackets and the
         product of ieee8021FrerPerPortPerStreamSeqRecoveryPassedPackets and
         (ieee8021FrerSequenceRecoveryLatentErrorPaths - 1)
         that is allowed. Any larger difference will trigger the
         detection of a latent error by the LatentErrorTest function.
         It is used if and only if
         ieee8021FrerSequenceRecoveryIndividualRecovery is False."
    REFERENCE   "10.4.1.12.1"
    ::= { ieee8021FrerSequenceRecoveryEntry 16 }

ieee8021FrerSequenceRecoveryLatentErrorPeriod OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies the number of milliseconds that
         are to elapse between instances of running the LatentErrorTest
         function. An implementation can have a minimum value for
         this managed object, below which it cannot be set, but this
         minimum shall be no larger than 1000 ms (1 s).
         Default value 2000 (2 s).
         It is used if and only if
         ieee8021FrerSequenceRecoveryIndividualRecovery is False."
    REFERENCE   "10.4.1.12.2"
    DEFVAL  { 2000 }
    ::= { ieee8021FrerSequenceRecoveryEntry 17 }

ieee8021FrerSequenceRecoveryLatentErrorPaths OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies the number of paths over which
         FRER is operating for this instance of the Base recovery
         function and Latent error detection function.
         It is used if and only if
         ieee8021FrerSequenceRecoveryIndividualRecovery is False."
    REFERENCE   "10.4.1.12.3"
    ::= { ieee8021FrerSequenceRecoveryEntry 18 }

ieee8021FrerSequenceRecoveryLatentResetPeriod OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies the number of milliseconds that
         are to elapse between instances of running the LatentErrorReset
         function. An implementation can have a minimum value for
         this managed object, below which it cannot be set, but this
         minimum shall be no larger than 1000 ms (1 s).
         It is used if and only if
```

```
            ieee8021FrerSequenceRecoveryIndividualRecovery is False."
        REFERENCE   "10.4.1.12.4"
        DEFVAL  { 30000 }
        ::= { ieee8021FrerSequenceRecoveryEntry 19 }

    ieee8021FrerSequenceRecoveryStatus OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Row-Status for the Sequence Recovery table."
        ::= { ieee8021FrerSequenceRecoveryEntry 20 }


    -- ============================================================
    -- the ieee8021FrerSequenceRecoveryHandleList table
    -- ============================================================

    ieee8021FrerSequenceRecoveryHandleListTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Ieee8021FrerSequenceRecoveryHandleListEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table containing a list of stream_handle values,
             corresponding to the values of the tsnStreamIdHandle objects in
             the Stream identity table, to which the system is to apply the
             instance of the Sequence recovery function or individual
             recovery function referenced in
             ieee8021FrerSequenceRecoveryIndex."
        REFERENCE   "10.4.1.1"
        ::= { ieee8021FrerSequenceRecoveryHandleList 4 }

    ieee8021FrerSequenceRecoveryHandleListEntry OBJECT-TYPE
        SYNTAX      Ieee8021FrerSequenceRecoveryHandleListEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A set of managed objects providing the stream_handle values
             corresponding to the values of the tsnStreamIdHandle objects in
             the Stream identity table, to which the system is to apply the
             instance of the Sequence recovery function or Individual
             recovery function referenced in
             ieee8021FrerSequenceRecoveryIndex."
        REFERENCE   "10.4.1.1"
        INDEX   { ieee8021FrerSequenceRecoveryIndex,
                  ieee8021FrerSequenceRecoveryHandleListIndex
                }
        ::= { ieee8021FrerSequenceRecoveryHandleListTable 1 }

    Ieee8021FrerSequenceRecoveryHandleListEntry ::=
        SEQUENCE {
            ieee8021FrerSequenceRecoveryHandleListIndex
                Unsigned32,
            ieee8021FrerSequenceRecoveryStreamHandle
                VariablePointer,
            ieee8021FrerSequenceRecoveryHandleListStatus
                RowStatus
        }

    ieee8021FrerSequenceRecoveryHandleListIndex OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Index for the Sequence Recovery handle list table."
        ::= { ieee8021FrerSequenceRecoveryHandleListEntry 1 }

    ieee8021FrerSequenceRecoveryStreamHandle OBJECT-TYPE
        SYNTAX      VariablePointer
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
```

```
            "A pointer to the ieee8021StreamIdStreamIdHandle that is an
             element of the ieee8021FrerSequenceRecoveryStreamList instance
             in the ieee8021FrerSequenceRecoveryTable."
        REFERENCE   "10.4.1.1"
        ::= { ieee8021FrerSequenceRecoveryHandleListEntry 2 }

    ieee8021FrerSequenceRecoveryHandleListStatus OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Row-Status for the Sequence Recovery handle list table."
        ::= { ieee8021FrerSequenceRecoveryHandleListEntry 3 }

    -- ============================================================
    -- the ieee8021FrerSequenceRecoveryPortHandleList table
    -- ============================================================
    ieee8021FrerSequenceRecoveryPortHandleListTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Ieee8021FrerSequenceRecoveryPortHandleListEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table containing a list of ports on each of which the system
             is to instantiate the Sequence recovery function, or from which
             received packets are to be fed to a single instance of the
             Individual recovery function, referenced in
             ieee8021FrerSequenceRecoveryIndex."
        REFERENCE   "10.4.1.2"
        ::= { ieee8021FrerSequenceRecoveryPortHandleList 5 }

    ieee8021FrerSequenceRecoveryPortHandleListEntry OBJECT-TYPE
        SYNTAX      Ieee8021FrerSequenceRecoveryPortHandleListEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A set of managed objects providing the ports on each of which the system
             is to instantiate the Sequence recovery function, or from which
             received packets are to be fed to a single instance of the
             Individual recovery function, referenced in
             ieee8021FrerSequenceRecoveryIndex."
        REFERENCE   "10.4.1.2"
        INDEX   { ieee8021FrerSequenceRecoveryIndex,
                  ieee8021FrerSequenceRecoveryPortHandleListIndex
                }
        ::= { ieee8021FrerSequenceRecoveryPortHandleListTable 1 }

    Ieee8021FrerSequenceRecoveryPortHandleListEntry ::=
        SEQUENCE {
            ieee8021FrerSequenceRecoveryPortHandleListIndex
                Unsigned32,
            ieee8021FrerSequenceRecoveryPortHandle
                VariablePointer,
            ieee8021FrerSequenceRecoveryPortHandleListStatus
                RowStatus
        }

    ieee8021FrerSequenceRecoveryPortHandleListIndex OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Index for the Sequence Recovery Port handle list table."
        ::= { ieee8021FrerSequenceRecoveryPortHandleListEntry 1 }

    ieee8021FrerSequenceRecoveryPortHandle OBJECT-TYPE
        SYNTAX      VariablePointer
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "A pointer to an interface that is an element of the
             ieee8021FrerSequenceRecoveryPortList instance in the
             ieee8021FrerSequenceRecoveryTable."
```

```
        REFERENCE   "10.4.1.2"
        ::= { ieee8021FrerSequenceRecoveryPortHandleListEntry 2 }

    ieee8021FrerSequenceRecoveryPortHandleListStatus OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Row-Status for the Sequence Recovery Port handle list table."
        ::= { ieee8021FrerSequenceRecoveryPortHandleListEntry 3 }

    -- ============================================================
    -- the ieee8021FrerSequenceIdentification table
    -- ============================================================

    ieee8021FrerSequenceIdentificationTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Ieee8021FrerSequenceIdentificationEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table containing a set of sequence identification entry
             objects. There is one entry for each port and direction for
             which an instance of the Sequence encode/decode function is to
             be instantiated for a list of Streams."
        REFERENCE   "10.5"
        ::= { ieee8021FrerSequenceIdentification 6 }

    ieee8021FrerSequenceIdentificationEntry OBJECT-TYPE
        SYNTAX      Ieee8021FrerSequenceIdentificationEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A set of managed objects that specify a port and direction on
             which an instance of the Sequence encode/decode function is to
             be instantiated for a list of Streams."
        REFERENCE   "10.5.1"
        INDEX   { ieee8021FrerSequenceIdentificationEncodePort,
                  ieee8021FrerSequenceIdentificationEncodeDirection
                }
        ::= { ieee8021FrerSequenceIdentificationTable 1 }

    Ieee8021FrerSequenceIdentificationEntry ::=
        SEQUENCE {
            ieee8021FrerSequenceIdentificationEncodePort
                InterfaceIndex,
            ieee8021FrerSequenceIdentificationEncodeDirection
                TruthValue,
            ieee8021FrerSequenceIdentificationStreamList
                AutonomousType,
            ieee8021FrerSequenceIdentificationEncodeActive
                TruthValue,
            ieee8021FrerSequenceIdentificationEncodeEncapsulationType
                Ieee8021CBSequenceEncodeDecodeType,
            ieee8021FrerSequenceIdentificationEncodeEncapsulationOUI
                OCTET STRING,
            ieee8021FrerSequenceIdentificationCustomEncodeEncapsulationType
                Integer32,
            ieee8021FrerSequenceIdentificationCustomEncodeEncapsulationOUI
                OCTET STRING,
            ieee8021FrerSequenceIdentificationEncodePathIdLanId
                Integer32,
            ieee8021FrerSequenceIdentificationStatus
                RowStatus
        }

    ieee8021FrerSequenceIdentificationEncodePort OBJECT-TYPE
        SYNTAX      InterfaceIndex
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "The port on which the system is to place an instance of the
             Sequence encode/decode function."
```

```
    REFERENCE   "10.5.1.2"
    ::= { ieee8021FrerSequenceIdentificationEntry 1 }

ieee8021FrerSequenceIdentificationEncodeDirection OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This managed object indicates whether the Sequence
         encode/decode function is to be placed on the out-facing (True)
         or in-facing (False) side of the port."
    REFERENCE   "10.5.1.3"
    ::= { ieee8021FrerSequenceIdentificationEntry 2 }

ieee8021FrerSequenceIdentificationStreamList OBJECT-TYPE
    SYNTAX      AutonomousType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "A list of stream_handles, corresponding to the values of the
         tsnStreamIdHandle objects in the Stream identity table, for
         which the system is to use the same encapsulation for the
         Sequence encode/decode function.
         For each entry in the ieee8021FrerSequenceIdentificationTable
         there exists a list of stream_handle values in the
         ieee8021FrerSequenceIdentificationHandleListTable."
    REFERENCE   "10.5.1.1"
    ::= { ieee8021FrerSequenceIdentificationEntry 3 }

ieee8021FrerSequenceIdentificationEncodeActive OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies whether this
         ieee8021FrerSequenceIdentificationEntry is passive (False),
         and therefore is used only to decode (extract information from)
         input packets passing up the protocol stack, or active (True),
         and therefore is used both for recognizing input packets and
         for encoding output packets being passed down the protocol
         stack."
    REFERENCE   "10.5.1.4"
    ::= { ieee8021FrerSequenceIdentificationEntry 4 }

ieee8021FrerSequenceIdentificationEncodeEncapsulationType OBJECT-TYPE
    SYNTAX      Ieee8021CBSequenceEncodeDecodeType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "An enumerated value specifying the type of encapsulation used
         for this instance of the Sequence encode/decode function. If
         the value used is nonIEEESpecified(256), the managed objects
         ieee8021FrerSequenceIdentificationCustomEncodeEncapsulationOUI
         and
         ieee8021FrerSequenceIdentificationCustomEncodeEncapsulationType
         are used to specify OUI/CID and the Sequence encode/decode
         method defined by the entity owning the OUI/CID."
    REFERENCE   "10.5.1.5"
    ::= { ieee8021FrerSequenceIdentificationEntry 5 }

ieee8021FrerSequenceIdentificationEncodeEncapsulationOUI OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (3))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This managed object specifies the OUI/CID used together with
         the encapsulation type specified in
         ieee8021FrerSequenceIdentificationEncodeEncapsulationType.
         It is used if and only if the value for
         ieee8021FrerSequenceIdentificationEncodeEncapsulationType is
         in the range of 0-255. In this case it always takes the value
         00-80-C2."
```

```
    REFERENCE   "10.5.1.5"
    ::= { ieee8021FrerSequenceIdentificationEntry 6 }

ieee8021FrerSequenceIdentificationCustomEncodeEncapsulationType OBJECT-TYPE
    SYNTAX      Integer32 (256..2147483647)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "An enumerated value specifying the type of encapsulation used
         for this instance of the Sequence encode/decode function. This
         managed object is used if and only if the value for
         ieee8021FrerSequenceIdentificationEncodeEncapsulationType is
         256."
    REFERENCE   "10.5.1.5"
    ::= { ieee8021FrerSequenceIdentificationEntry 7 }

ieee8021FrerSequenceIdentificationCustomEncodeEncapsulationOUI OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (3))
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies the OUI/CID used together with
         the encapsulation type specified in
         ieee8021FrerSequenceIdentificationCustomEncodeEncapsulationType.
         It is used if and only if the value for
         ieee8021FrerSequenceIdentificationEncodeEncapsulationType is
         256."
    REFERENCE   "10.5.1.5"
    ::= { ieee8021FrerSequenceIdentificationEntry 8 }

ieee8021FrerSequenceIdentificationEncodePathIdLanId OBJECT-TYPE
    SYNTAX      Integer32 (0..15)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "A 4-bit integer value to be placed in the PathId field of an
         HSR sequence tag or the LanId field of a PRP sequence trailer
         added to an output packet."
    REFERENCE   "10.5.1.6"
    ::= { ieee8021FrerSequenceIdentificationEntry 9 }

ieee8021FrerSequenceIdentificationStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Row-Status for the Sequence Identification table."
    ::= { ieee8021FrerSequenceIdentificationEntry 10 }

-- ============================================================
-- the ieee8021FrerSequenceIdentificationHandleList table
-- ============================================================

ieee8021FrerSequenceIdentificationHandleListTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021FrerSequenceIdentificationHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a list of stream_handle values,
         corresponding to the values of the tsnStreamIdHandle objects in
         the Stream identity table, for which the system is to use the
         same encapsulation for the Sequence encode/decode function
         referenced in ieee8021FrerSequenceIdentificationEncodePort
         and ieee8021FrerSequenceIdentificationEncodeDirection."
    REFERENCE   "10.5.1.1"
    ::= { ieee8021FrerSequenceIdentificationHandleList 7 }

ieee8021FrerSequenceIdentificationHandleListEntry OBJECT-TYPE
    SYNTAX      Ieee8021FrerSequenceIdentificationHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
```

```
            "A set of managed objects providing the stream_handle values
             corresponding to the values of the tsnStreamIdHandle objects in
             the Stream identity table, for which the system is to use the
             same encapsulation for the Sequence encode/decode function
             referenced in ieee8021FrerSequenceIdentificationEncodePort
             and ieee8021FrerSequenceIdentificationEncodeDirection."
        REFERENCE   "10.5.1.1"
        INDEX   { ieee8021FrerSequenceIdentificationEncodePort,
                  ieee8021FrerSequenceIdentificationEncodeDirection,
                  ieee8021FrerSequenceIdentificationHandleListIndex
                }
        ::= { ieee8021FrerSequenceIdentificationHandleListTable 1 }

    Ieee8021FrerSequenceIdentificationHandleListEntry ::=
        SEQUENCE {
            ieee8021FrerSequenceIdentificationHandleListIndex
                Unsigned32,
            ieee8021FrerSequenceIdentificationStreamHandle
                VariablePointer,
            ieee8021FrerSequenceIdentificationHandleListStatus
                RowStatus
        }

    ieee8021FrerSequenceIdentificationHandleListIndex OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Index for the Sequence Identification handle list table."
        ::= { ieee8021FrerSequenceIdentificationHandleListEntry 1 }

    ieee8021FrerSequenceIdentificationStreamHandle OBJECT-TYPE
        SYNTAX      VariablePointer
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "A pointer to the ieee8021StreamIdStreamIdHandle that is an
             element of the ieee8021FrerSequenceIdentificationStreamList
             instance in the ieee8021FrerSequenceIdentificationTable."
        REFERENCE   "10.5.1.1"
        ::= { ieee8021FrerSequenceIdentificationHandleListEntry 2 }

    ieee8021FrerSequenceIdentificationHandleListStatus OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Row-Status for the Sequence Identification handle list table."
        ::= { ieee8021FrerSequenceIdentificationHandleListEntry 3 }

    -- ============================================================
    -- the ieee8021FrerStreamSplit table
    -- ============================================================

    ieee8021FrerStreamSplitTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Ieee8021FrerStreamSplitEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table containing a set of FRER split entry objects. There is
             one entry per Stream splitting function per set of
             stream_handle values."
        REFERENCE   "10.6"
        ::= { ieee8021FrerStreamSplit 8 }

    ieee8021FrerStreamSplitEntry OBJECT-TYPE
        SYNTAX      Ieee8021FrerStreamSplitEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A set of managed objects that specify a port and direction
             on which an instance of the Stream splitting function is to be
```

```
            instantiated, and the list of stream_handles specifying its
            operation."
        REFERENCE   "10.6.1"
        INDEX   { ieee8021FrerStreamSplitIndex }
        ::= { ieee8021FrerStreamSplitTable 1 }

    Ieee8021FrerStreamSplitEntry ::=
        SEQUENCE {
            ieee8021FrerStreamSplitIndex
                Unsigned32,
            ieee8021FrerStreamSplitPort
                InterfaceIndex,
            ieee8021FrerStreamSplitDirection
                TruthValue,
            ieee8021FrerStreamSplitInputIdList
                AutonomousType,
            ieee8021FrerStreamSplitOutputIdList
                AutonomousType
        }

    ieee8021FrerStreamSplitIndex OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Index for the Stream Split table."
        ::= { ieee8021FrerStreamSplitEntry 1 }

    ieee8021FrerStreamSplitPort OBJECT-TYPE
        SYNTAX      InterfaceIndex
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "The port on which the system is to place an instance of the
             Stream splitting function performing the stream_handle
             translations specified by ieee8021FrerStreamSplitInputIdList
             and ieee8021FrerStreamSplitOutputIdList is to be placed."
        REFERENCE   "10.6.1.1"
        ::= { ieee8021FrerStreamSplitEntry 2 }

    ieee8021FrerStreamSplitDirection OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object indicates whether the instance of the
             Stream splitting function performing the stream_handle
             translations specified by ieee8021FrerStreamSplitInputIdList
             and ieee8021FrerStreamSplitOutputIdList is to be placed on the
             out-facing (True) or in-facing (False) side of the port."
        REFERENCE   "10.6.1.1"
        ::= { ieee8021FrerStreamSplitEntry 3 }

    ieee8021FrerStreamSplitInputIdList OBJECT-TYPE
        SYNTAX      AutonomousType
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A list of stream_handles that are to be split.
             For each entry in the ieee8021FrerStreamSplitTable
             there exists a list of stream_handle values in the
             ieee8021FrerStreamSplitInputHandleListTable."
        REFERENCE   "10.6.1.3"
        ::= { ieee8021FrerStreamSplitEntry 4 }

    ieee8021FrerStreamSplitOutputIdList OBJECT-TYPE
        SYNTAX      AutonomousType
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A list of stream_handles into which the input packet is to be
             split, one copy per item in the
```

```
            ieee8021FrerStreamSplitOutputIdList.
            For each entry in the ieee8021FrerStreamSplitTable
            there exists a list of stream_handle values in the
            ieee8021FrerStreamSplitOutputHandleListTable."
        REFERENCE   "10.6.1.4"
        ::= { ieee8021FrerStreamSplitEntry 5 }

    -- ============================================================
    -- the ieee8021FrerStreamSplitInputHandleList table
    -- ============================================================
    ieee8021FrerStreamSplitInputHandleListTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Ieee8021FrerStreamSplitInputHandleListEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table containing a list of stream_handle values that are to
             be split, referenced in ieee8021FrerStreamSplitIndex."
        REFERENCE   "10.6.1.3"
        ::= { ieee8021FrerStreamSplitInputHandleList 9 }

    ieee8021FrerStreamSplitInputHandleListEntry OBJECT-TYPE
        SYNTAX      Ieee8021FrerStreamSplitInputHandleListEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A set of managed objects providing the stream_handle values
             corresponding to the values of the tsnStreamIdHandle objects in
             the Stream identity table, that are to be split, referenced in
             ieee8021FrerStreamSplitIndex."
        REFERENCE   "10.6.1.3"
        INDEX   { ieee8021FrerStreamSplitIndex,
                  ieee8021FrerStreamSplitInputHandleListIndex
                }
        ::= { ieee8021FrerStreamSplitInputHandleListTable 1 }

    Ieee8021FrerStreamSplitInputHandleListEntry ::=
        SEQUENCE {
            ieee8021FrerStreamSplitInputHandleListIndex
                Unsigned32,
            ieee8021FrerStreamSplitInputIdHandle
                VariablePointer,
            ieee8021FrerStreamSplitInputHandleListStatus
                RowStatus
        }

    ieee8021FrerStreamSplitInputHandleListIndex OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Index for the Stream Split Input handle list table."
        ::= { ieee8021FrerStreamSplitInputHandleListEntry 1 }

    ieee8021FrerStreamSplitInputIdHandle OBJECT-TYPE
        SYNTAX      VariablePointer
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "A pointer to the ieee8021StreamIdStreamIdHandle that is an
             element of the ieee8021FrerStreamSplitInputIdList instance in
             the ieee8021FrerStreamSplitTable."
        REFERENCE   "10.6.1.3"
        ::= { ieee8021FrerStreamSplitInputHandleListEntry 2 }

    ieee8021FrerStreamSplitInputHandleListStatus OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Row-Status for the Stream Split Input handle list table."
        ::= { ieee8021FrerStreamSplitInputHandleListEntry 3 }
```

```
-- ============================================================
-- the ieee8021FrerStreamSplitOutputHandleList table
-- ============================================================
ieee8021FrerStreamSplitOutputHandleListTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021FrerStreamSplitOutputHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a list of stream_handles values into which
         the input packet is to be split, one copy per item in this
         table, referenced in ieee8021FrerStreamSplitIndex."
    REFERENCE   "10.6.1.4"
    ::= { ieee8021FrerStreamSplitOutputHandleList 10 }

ieee8021FrerStreamSplitOutputHandleListEntry OBJECT-TYPE
    SYNTAX      Ieee8021FrerStreamSplitOutputHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of managed objects providing the stream_handle values
         corresponding to the values of the tsnStreamIdHandle objects in
         the Stream identity table, into which the input packet is to be
         split, one copy per item in this table, referenced in
         ieee8021FrerStreamSplitIndex."
    REFERENCE   "10.6.1.4"
    INDEX   { ieee8021FrerStreamSplitIndex,
              ieee8021FrerStreamSplitOutputHandleListIndex
            }
    ::= { ieee8021FrerStreamSplitOutputHandleListTable 1 }

Ieee8021FrerStreamSplitOutputHandleListEntry ::=
    SEQUENCE {
        ieee8021FrerStreamSplitOutputHandleListIndex
            Unsigned32,
        ieee8021FrerStreamSplitOutputIdHandle
            VariablePointer,
        ieee8021FrerStreamSplitOutputHandleListStatus
            RowStatus
    }

ieee8021FrerStreamSplitOutputHandleListIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index for the Stream Split Output handle list table."
    ::= { ieee8021FrerStreamSplitOutputHandleListEntry 1 }

ieee8021FrerStreamSplitOutputIdHandle OBJECT-TYPE
    SYNTAX      VariablePointer
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "A pointer to the ieee8021StreamIdStreamIdHandle that is an
         element of the ieee8021FrerStreamSplitOutputIdList instance in
         the ieee8021FrerStreamSplitTable."
    REFERENCE   "10.6.1.4"
    ::= { ieee8021FrerStreamSplitOutputHandleListEntry 2 }

ieee8021FrerStreamSplitOutputHandleListStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Row-Status for the Stream Split Output handle list table."
    ::= { ieee8021FrerStreamSplitOutputHandleListEntry 3 }

-- ============================================================
-- the ieee8021FrerSequenceAutoconfig table
-- ============================================================

ieee8021FrerSequenceAutoconfigTable OBJECT-TYPE
```

```
    SYNTAX      SEQUENCE OF Ieee8021FrerSequenceAutoconfigEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a set of managed objects that specify how
         entries are automatically created (and destroyed) in the
         Stream identity table, the Sequence recovery table, and the
         Sequence identification table."
    REFERENCE   "10.7.1"
    ::= { ieee8021FrerSequenceAutoconfig 11 }

ieee8021FrerSequenceAutoconfigEntry OBJECT-TYPE
    SYNTAX      Ieee8021FrerSequenceAutoconfigEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of managed objects relating to a single class of Streams,
         and specifying how entries are created (and destroyed) in the
         Stream identity table, the Sequence recovery table, and the
         Sequence identification table."
    REFERENCE   "10.7.1.1"
    INDEX  { ieee8021FrerSequenceAutoconfigIndex }
    ::= { ieee8021FrerSequenceAutoconfigTable 1 }

Ieee8021FrerSequenceAutoconfigEntry ::=
    SEQUENCE {
        ieee8021FrerSequenceAutoconfigIndex
            Unsigned32,
        ieee8021FrerSequenceAutoconfigSequenceEncapsulation
            Ieee8021CBSequenceEncodeDecodeType,
        ieee8021FrerSequenceAutoconfigSequenceEncapsulationOUI
            OCTET STRING,
        ieee8021FrerSequenceAutoconfigCustomSequenceEncapsulation
            Integer32,
        ieee8021FrerSequenceAutoconfigCustomSequenceEncOUI
            OCTET STRING,
        ieee8021FrerSequenceAutoconfigReceivePortList
            AutonomousType,
        ieee8021FrerSequenceAutoconfigTagged
            Ieee8021CBTaggedType,
        ieee8021FrerSequenceAutoconfigVlanList
            AutonomousType,
        ieee8021FrerSequenceAutoconfigRecoveryPortList
            AutonomousType,
        ieee8021FrerSequenceAutoconfigDestructMSec
            Integer32,
        ieee8021FrerSequenceAutoconfigResetMSec
            Unsigned32,
        ieee8021FrerSequenceAutoconfigAlgorithm
            Ieee8021CBSequenceRecoveryAlgorithm,
        ieee8021FrerSequenceAutoconfigAlgorithmOUI
            OCTET STRING,
        ieee8021FrerSequenceAutoconfigCustomAlgorithm
            Integer32,
        ieee8021FrerSequenceAutoconfigCustomAlgorithmOUI
            OCTET STRING,
        ieee8021FrerSequenceAutoconfigHistoryLength
            Integer32,
        ieee8021FrerSequenceAutoconfigCreateIndividual
            TruthValue,
        ieee8021FrerSequenceAutoconfigCreateRecovery
            TruthValue,
        ieee8021FrerSequenceAutoconfigLatentErrorDetection
            TruthValue,
        ieee8021FrerSequenceAutoconfigLatentErrorDifference
            Integer32,
        ieee8021FrerSequenceAutoconfigLatentErrorPeriod
            Integer32,
        ieee8021FrerSequenceAutoconfigLatentErrorResetPeriod
            Integer32,
        ieee8021FrerSequenceAutoconfigStatus
            RowStatus
```

```
    }

ieee8021FrerSequenceAutoconfigIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index for the Sequence Autoconfiguration table."
    ::= { ieee8021FrerSequenceAutoconfigEntry 1 }

ieee8021FrerSequenceAutoconfigSequenceEncapsulation OBJECT-TYPE
    SYNTAX      Ieee8021CBSequenceEncodeDecodeType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies which Sequence encode/decode
         function, and therefore, which type sequence_number encoding,
         is to be recognized for the purposes of Autoconfiguration."
    REFERENCE   "10.7.1.1.1"
    ::= { ieee8021FrerSequenceAutoconfigEntry 2 }

ieee8021FrerSequenceAutoconfigSequenceEncapsulationOUI OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (3))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This managed object specifies which Sequence encode/decode
         function, and therefore, which type sequence_number encoding,
         is to be recognized for the purposes of Autoconfiguration.
         It is used if and only if the value for
         ieee8021FrerSequenceAutoconfigSequenceEncapsulation is
         in the range of 0-255. In this case it always takes the value
         00-80-C2."
    REFERENCE   "10.7.1.1.1"
    ::= { ieee8021FrerSequenceAutoconfigEntry 3 }

ieee8021FrerSequenceAutoconfigCustomSequenceEncapsulation OBJECT-TYPE
    SYNTAX      Integer32 (256..2147483647)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies which Sequence encode/decode
         function, and therefore, which type sequence_number encoding,
         is to be recognized for the purposes of Autoconfiguration.
         This managed object is used if and only if the value for
         ieee8021FrerSequenceAutoconfigSequenceEncapsulation is
         256."
    REFERENCE   "10.7.1.1.1"
    ::= { ieee8021FrerSequenceAutoconfigEntry 4 }

ieee8021FrerSequenceAutoconfigCustomSequenceEncOUI OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (3))
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This managed object specifies which Sequence encode/decode
         function, and therefore, which type sequence_number encoding,
         is to be recognized for the purposes of Autoconfiguration.
         This managed object is used if and only if the value for
         ieee8021FrerSequenceAutoconfigSequenceEncapsulation is
         256."
    REFERENCE   "10.7.1.1.1"
    ::= { ieee8021FrerSequenceAutoconfigEntry 5 }

ieee8021FrerSequenceAutoconfigReceivePortList OBJECT-TYPE
    SYNTAX      AutonomousType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The list of ports to which this Sequence Autoconfiguration
         entry applies, and on which Stream identification functions,
         Sequence encode/decode functions, and Individual recovery
```

```
            functions are to be autocreated.
            For each entry in the ieee8021FrerSequenceAutoconfigTable
            there exists a list of ports in the
            ieee8021FrerSequenceAutoconfigReceivePortHandleListTable."
        REFERENCE   "10.7.1.1.2"
        ::= { ieee8021FrerSequenceAutoconfigEntry 6 }

    ieee8021FrerSequenceAutoconfigTagged OBJECT-TYPE
        SYNTAX      Ieee8021CBTaggedType
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "An enumerated value indicating whether packets to be matched by
            this Autorecovery entry are permitted to have a VLAN tag."
        REFERENCE   "10.7.1.1.3"
        ::= { ieee8021FrerSequenceAutoconfigEntry 7 }

    ieee8021FrerSequenceAutoconfigVlanList OBJECT-TYPE
        SYNTAX      AutonomousType
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "A list of vlan_identifiers for the packet to match. A null list
            matches all vlan_identifiers.
            For each entry in the ieee8021FrerSequenceAutoconfigTable
            there exists a list of vlan_identifiers in the
            ieee8021FrerSequenceAutoconfigVlanListTable."
        REFERENCE   "10.7.1.1.4"
        ::= { ieee8021FrerSequenceAutoconfigEntry 8 }

    ieee8021FrerSequenceAutoconfigRecoveryPortList OBJECT-TYPE
        SYNTAX      AutonomousType
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "The list of ports on which Sequence recovery functions are to
            be autocreated by this Autorecovery entry.
            For each entry in the ieee8021FrerSequenceAutoconfigTable
            there exists a list of ports in the
            ieee8021FrerSequenceAutoconfigRecoveryPortHandleListTable."
        REFERENCE   "10.7.1.1.5"
        ::= { ieee8021FrerSequenceAutoconfigEntry 9 }

    ieee8021FrerSequenceAutoconfigDestructMSec OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object specifies the number of milliseconds after
            which an idle set of functions created by this Autorecovery
            entry can be destroyed. A value of 0 indicates that idle
            autoconfigured functions are not to be destroyed."
        REFERENCE   "10.7.1.1.6"
        DEFVAL { 86400000 }
        ::= { ieee8021FrerSequenceAutoconfigEntry 10 }

    ieee8021FrerSequenceAutoconfigResetMSec OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object specifies the value used to fill
            ieee8021FrerSequenceRecoveryResetMSec when autoconfiguring
            entries in the Sequence recovery table."
        REFERENCE   "10.7.1.1.7"
        ::= { ieee8021FrerSequenceAutoconfigEntry 11 }

    ieee8021FrerSequenceAutoconfigAlgorithm OBJECT-TYPE
        SYNTAX      Ieee8021CBSequenceRecoveryAlgorithm
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
```

```
            "This managed object specifies the value used to fill
             ieee8021FrerSequenceRecoveryAlgorithm when autoconfiguring
             entries in the Sequence recovery table."
        REFERENCE   "10.7.1.1.8"
        ::= { ieee8021FrerSequenceAutoconfigEntry 12 }

    ieee8021FrerSequenceAutoconfigAlgorithmOUI OBJECT-TYPE
        SYNTAX      OCTET STRING (SIZE (3))
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "This managed object specifies the value used to fill
             ieee8021FrerSequenceRecoveryAlgorithmOUI when autoconfiguring
             entries in the Sequence recovery table."
        REFERENCE   "10.7.1.1.8"
        ::= { ieee8021FrerSequenceAutoconfigEntry 13 }

    ieee8021FrerSequenceAutoconfigCustomAlgorithm OBJECT-TYPE
        SYNTAX      Integer32 (256..2147483647)
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object specifies the value used to fill
             ieee8021FrerSequenceCustomRecoveryAlgorithm when
             autoconfiguring entries in the Sequence recovery table."
        REFERENCE   "10.7.1.1.8"
        ::= { ieee8021FrerSequenceAutoconfigEntry 14 }

    ieee8021FrerSequenceAutoconfigCustomAlgorithmOUI OBJECT-TYPE
        SYNTAX      OCTET STRING (SIZE (3))
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object specifies the value used to fill
             ieee8021FrerSequenceCustomRecoveryAlgorithmOUI
             when autoconfiguring entries in the Sequence recovery table."
        REFERENCE   "10.7.1.1.8"
        ::= { ieee8021FrerSequenceAutoconfigEntry 15 }

    ieee8021FrerSequenceAutoconfigHistoryLength OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object specifies the value used to fill
             ieee8021FrerSequenceRecoveryHistoryLength when autoconfiguring
             entries in the Sequence recovery table."
        REFERENCE   "10.7.1.1.9"
        ::= { ieee8021FrerSequenceAutoconfigEntry 16 }

    ieee8021FrerSequenceAutoconfigCreateIndividual OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object specifies if the receipt of a packet that
             triggers the autoconfiguration of a new entry in the Stream
             Identity table also triggers the instantiation of a new entry
             in the Sequence Generation table for an Individual recovery
             function (true) or not (false)."
        REFERENCE   "10.7.1.1.10"
        ::= { ieee8021FrerSequenceAutoconfigEntry 17 }

    ieee8021FrerSequenceAutoconfigCreateRecovery OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object specifies if the receipt of a packet that
             triggers the autoconfiguration of a new entry in the Stream
             Identity table also triggers the instantiation of a new entry
             in the Sequence Generation table for a Sequence recovery
```

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            function (true) or not (false)."
        REFERENCE   "10.7.1.1.11"
        ::= { ieee8021FrerSequenceAutoconfigEntry 18 }

    ieee8021FrerSequenceAutoconfigLatentErrorDetection OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object specifies if the autoconfiguration of a
             new Sequence recovery function also creates an associated
             Latent Error Detection function (true) or not (false)."
        REFERENCE   "10.7.1.1.12"
        ::= { ieee8021FrerSequenceAutoconfigEntry 19 }

    ieee8021FrerSequenceAutoconfigLatentErrorDifference OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object specifies the value used to fill
             ieee8021FrerSequenceRecoveryLatentErrorDifference when
             autoconfiguring entries in the Sequence recovery table."
        REFERENCE   "10.7.1.1.13"
        ::= { ieee8021FrerSequenceAutoconfigEntry 20 }

    ieee8021FrerSequenceAutoconfigLatentErrorPeriod OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object specifies the value used to fill
             ieee8021FrerSequenceRecoveryLatentErrorPeriod when
             autoconfiguring entries in the Sequence recovery table."
        REFERENCE   "10.7.1.1.14"
        ::= { ieee8021FrerSequenceAutoconfigEntry 21 }

    ieee8021FrerSequenceAutoconfigLatentErrorResetPeriod OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object specifies the value used to fill
             ieee8021FrerSequenceRecoveryLatentResetPeriod when
             autoconfiguring entries in the Sequence recovery table."
        REFERENCE   "10.7.1.1.15"
        ::= { ieee8021FrerSequenceAutoconfigEntry 22 }

    ieee8021FrerSequenceAutoconfigStatus OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Row Status for the Sequence Autoconfiguration table."
        ::= { ieee8021FrerSequenceAutoconfigEntry 23 }

    -- ============================================================
    -- the ieee8021FrerSequenceAutoconfigReceivePortHandleList
    -- table
    -- ============================================================
    ieee8021FrerSequenceAutoconfigReceivePortHandleListTable OBJECT-TYPE
         SYNTAX      SEQUENCE OF Ieee8021FrerSequenceAutoconfigReceivePortHandleLis-
    tEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table containing a list of ports to which this
             frerAutSeqEntry applies, and on which Stream identification
             functions, Sequence encode/decode functions, and Individual
             recovery functions are to be autocreated, referenced in
             ieee8021FrerSequenceAutoconfigIndex."
        REFERENCE   "10.7.1.1.2"
```

```
    ::= { ieee8021FrerSequenceAutoconfigReceivePortHandleList 12}

ieee8021FrerSequenceAutoconfigReceivePortHandleListEntry OBJECT-TYPE
    SYNTAX      Ieee8021FrerSequenceAutoconfigReceivePortHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of managed objects providing the ports to which this
         frerAutSeqEntry applies, and on which Stream identification
         functions, Sequence encode/decode functions, and Individual
         recovery functions are to be autocreated, referenced in
         ieee8021FrerSequenceAutoconfigIndex."
    REFERENCE   "10.7.1.1.2"
    INDEX   { ieee8021FrerSequenceAutoconfigIndex,
              ieee8021FrerSequenceAutoconfigReceivePortHandleListIndex
            }
    ::= { ieee8021FrerSequenceAutoconfigReceivePortHandleListTable 1 }

Ieee8021FrerSequenceAutoconfigReceivePortHandleListEntry ::=
    SEQUENCE {
        ieee8021FrerSequenceAutoconfigReceivePortHandleListIndex
            Unsigned32,
        ieee8021FrerSequenceAutoconfigReceivePortHandle
            VariablePointer,
        ieee8021FrerSequenceAutoconfigReceivePortHandleListStatus
            RowStatus
    }

ieee8021FrerSequenceAutoconfigReceivePortHandleListIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index for the Sequence Autoconfiguration Receive Port handle
         list table."
    ::= { ieee8021FrerSequenceAutoconfigReceivePortHandleListEntry 1 }

ieee8021FrerSequenceAutoconfigReceivePortHandle OBJECT-TYPE
    SYNTAX      VariablePointer
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "A pointer to the ieee8021StreamIdStreamIdHandle that is an
         element of the ieee8021FrerSequenceAutoconfigReceivePortList
         instance in the ieee8021FrerSequenceAutoconfigTable."
    REFERENCE   "10.7.1.1.2"
    ::= { ieee8021FrerSequenceAutoconfigReceivePortHandleListEntry 2 }

ieee8021FrerSequenceAutoconfigReceivePortHandleListStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "RowStatus for the Sequence Autoconfiguration Receive Port
         handle list table."
    ::= { ieee8021FrerSequenceAutoconfigReceivePortHandleListEntry 3 }

-- ============================================================
-- the ieee8021FrerSequenceAutoconfigVlanHandleList table
-- ============================================================
ieee8021FrerSequenceAutoconfigVlanListTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021FrerSequenceAutoconfigVlanListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a list of vlan_identifiers for the packet to
         match. A null list matches all vlan_identifiers."
    REFERENCE   "10.7.1.1.4"
    ::= { ieee8021FrerSequenceAutoconfigVlanHandleList 13}

ieee8021FrerSequenceAutoconfigVlanListEntry OBJECT-TYPE
    SYNTAX      Ieee8021FrerSequenceAutoconfigVlanListEntry
```

```
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of managed objects providing the list of vlan_identifiers
         for the packet to match. A null list matches all
         vlan_identifiers."
    REFERENCE   "10.7.1.1.4"
    INDEX   { ieee8021FrerSequenceAutoconfigIndex,
              ieee8021FrerSequenceAutoconfigVlanListIndex
            }
    ::= { ieee8021FrerSequenceAutoconfigVlanListTable 1 }

Ieee8021FrerSequenceAutoconfigVlanListEntry ::=
    SEQUENCE {
        ieee8021FrerSequenceAutoconfigVlanListIndex
            Unsigned32,
        ieee8021FrerSequenceAutoconfigVlan
            Ieee8021CBVlanIdentifier,
        ieee8021FrerSequenceAutoconfigVlanListStatus
            RowStatus
    }

ieee8021FrerSequenceAutoconfigVlanListIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index for the Sequence Autoconfiguration VLAN list table."
    ::= { ieee8021FrerSequenceAutoconfigVlanListEntry 1 }

ieee8021FrerSequenceAutoconfigVlan OBJECT-TYPE
    SYNTAX      Ieee8021CBVlanIdentifier
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "A vlan_identifier for the packet to match."
    REFERENCE   "10.7.1.1.4"
    ::= { ieee8021FrerSequenceAutoconfigVlanListEntry 2 }

ieee8021FrerSequenceAutoconfigVlanListStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Row-Status for the Sequence Autoconfiguration VLAN list
         table."
    ::= { ieee8021FrerSequenceAutoconfigVlanListEntry 3 }

-- ============================================================
-- the ieee8021FrerSequenceAutoconfigRecoveryPortHandleList
-- table
-- ============================================================
ieee8021FrerSequenceAutoconfigRecoveryPortHandleListTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021FrerSequenceAutoconfigRecoveryPortHandleLis-
tEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a list of ports on which Sequence recovery
         functions are to be autocreated by this frerAutSeqEntry,
         referenced in ieee8021FrerSequenceAutoconfigIndex."
    REFERENCE   "10.7.1.1.5"
    ::= { ieee8021FrerSequenceAutoconfigRecoveryPortHandleList 14}

ieee8021FrerSequenceAutoconfigRecoveryPortHandleListEntry OBJECT-TYPE
    SYNTAX      Ieee8021FrerSequenceAutoconfigRecoveryPortHandleListEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of managed objects providing the ports on which Sequence
         recovery functions are to be autocreated by this
         frerAutSeqEntry, referenced in
```

```
            ieee8021FrerSequenceAutoconfigIndex."
        REFERENCE   "10.7.1.1.5"
        INDEX   { ieee8021FrerSequenceAutoconfigIndex,
                  ieee8021FrerSequenceAutoconfigRecoveryPortHandleListIndex
                }
        ::= { ieee8021FrerSequenceAutoconfigRecoveryPortHandleListTable 1 }

    Ieee8021FrerSequenceAutoconfigRecoveryPortHandleListEntry ::=
        SEQUENCE {
            ieee8021FrerSequenceAutoconfigRecoveryPortHandleListIndex
                Unsigned32,
            ieee8021FrerSequenceAutoconfigRecoveryPortHandle
                VariablePointer,
            ieee8021FrerSequenceAutoconfigRecoveryPortHandleListStatus
                RowStatus
        }

    ieee8021FrerSequenceAutoconfigRecoveryPortHandleListIndex OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Index for the Sequence Autoconfiguration Recovery Port handle
             list table."
        ::= { ieee8021FrerSequenceAutoconfigRecoveryPortHandleListEntry 1 }

    ieee8021FrerSequenceAutoconfigRecoveryPortHandle OBJECT-TYPE
        SYNTAX      VariablePointer
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "A pointer to the ieee8021StreamIdStreamHandle that is an
             element of the ieee8021FrerSequenceAutoconfigRecoveryPortList
             instance in the ieee8021FrerSequenceAutoconfigTable."
        REFERENCE   "10.7.1.1.5"
        ::= { ieee8021FrerSequenceAutoconfigRecoveryPortHandleListEntry 2 }

    ieee8021FrerSequenceAutoconfigRecoveryPortHandleListStatus OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Row-Status for the Sequence Autoconfiguration Recovery Port
             handle list table."
        ::= { ieee8021FrerSequenceAutoconfigRecoveryPortHandleListEntry 3 }

    -- ================================================================
    -- the ieee8021FrerOutputAutoconfig table
    -- ================================================================

    ieee8021FrerOutputAutoconfigTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Ieee8021FrerOutputAutoconfigEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table containing a set of managed objects that specify how
             active entries are created in the Sequence identification
             table."
        REFERENCE   "10.7.2"
        ::= { ieee8021FrerOutputAutoconfig 15 }

    ieee8021FrerOutputAutoconfigEntry OBJECT-TYPE
        SYNTAX      Ieee8021FrerOutputAutoconfigEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A set of managed objects relating to a single class of Streams
             specifying how active entries are created in the Sequence
             identification table."
        REFERENCE   "10.7.2.1"
        INDEX  { ieee8021FrerOutputAutoconfigIndex }
        ::= { ieee8021FrerOutputAutoconfigTable 1 }
```

```
Ieee8021FrerOutputAutoconfigEntry ::=
    SEQUENCE {
        ieee8021FrerOutputAutoconfigIndex
            Unsigned32,
        ieee8021FrerOutputAutoconfigPortList
            AutonomousType,
        ieee8021FrerOutputAutoconfigEncapsulation
            Ieee8021CBSequenceEncodeDecodeType,
        ieee8021FrerOutputAutoconfigEncapsulationOUI
            OCTET STRING,
        ieee8021FrerOutputAutoconfigCustomEncapsulation
            Integer32,
        ieee8021FrerOutputAutoconfigCustomEncapsulationOUI
            OCTET STRING,
        ieee8021FrerOutputAutoconfigLanPathId
            Ieee8021CBLanPathIdType,
        ieee8021FrerOutputAutoconfigStatus
            RowStatus
    }

ieee8021FrerOutputAutoconfigIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index for the Output Autoconfiguration table."
    ::= { ieee8021FrerOutputAutoconfigEntry 1 }

ieee8021FrerOutputAutoconfigPortList OBJECT-TYPE
    SYNTAX      AutonomousType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The list of ports to which this Output Autoconfiguration entry
         applies, and on which active Sequence encode/decode functions
         are to be autocreated.
         For each entry in the ieee8021FrerOutputAutoconfigTable
         there exists a list of ports in the
         ieee8021FrerOutputAutoconfigPortHandleListTable."
    REFERENCE   "10.7.2.1.1"
    ::= { ieee8021FrerOutputAutoconfigEntry 2 }

ieee8021FrerOutputAutoconfigEncapsulation OBJECT-TYPE
    SYNTAX      Ieee8021CBSequenceEncodeDecodeType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
         "This managed object specifies which Sequence encode/decode
          function, and therefore, which type sequence_number encoding,
          is to be used for autoconfigured Streams on the ports in
          ieee8021FrerSequenceAutoconfigReceivePortList."
    REFERENCE   "10.7.2.1.2"
    ::= { ieee8021FrerOutputAutoconfigEntry 3 }

ieee8021FrerOutputAutoconfigEncapsulationOUI OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (3))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This managed object specifies which Sequence encode/decode
         function, and therefore, which type sequence_number encoding,
         is to be used for autoconfigured Streams on the ports in
         ieee8021FrerSequenceAutoconfigReceivePortList.
         It is used if and only if the value for
         ieee8021FrerOutputAutoconfigEncapsulation is in the
         range of 0-255. In this case it always takes the value
         00-80-C2."
    REFERENCE   "10.7.2.1.2"
    ::= { ieee8021FrerOutputAutoconfigEntry 4 }

ieee8021FrerOutputAutoconfigCustomEncapsulation OBJECT-TYPE
```

```
        SYNTAX      Integer32 (256..2147483647)
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object specifies which Sequence encode/decode
             function, and therefore, which type sequence_number encoding,
             is to be used for autoconfigured Streams on the ports in
             ieee8021FrerSequenceAutoconfigReceivePortList. This
             managed object is used if and only if the value for
             ieee8021FrerOutputAutoconfigEncapsulation is 256."
        REFERENCE   "10.7.2.1.2"
        ::= { ieee8021FrerOutputAutoconfigEntry 5 }

    ieee8021FrerOutputAutoconfigCustomEncapsulationOUI OBJECT-TYPE
        SYNTAX      OCTET STRING (SIZE (3))
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This managed object specifies which Sequence encode/decode
             function, and therefore, which type sequence_number encoding,
             is to be used for autoconfigured Streams on the ports in
             ieee8021FrerSequenceAutoconfigReceivePortList. This
             managed object is used if and only if the value for
             ieee8021FrerOutputAutoconfigEncapsulation is 256."
        REFERENCE   "10.7.2.1.2"
        ::= { ieee8021FrerOutputAutoconfigEntry 6 }

    ieee8021FrerOutputAutoconfigLanPathId OBJECT-TYPE
        SYNTAX      Ieee8021CBLanPathIdType
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "An integer specifying a path or LAN. If and only if
             ieee8021FrerOutputAutoconfigEncapsulation specifies HSR
             or PRP this managed object specifies the LanId or PathId value
             to be inserted into the HSR sequence tag or PRP sequence
             trailer of autoconfigured packets transmitted on the ports
             in ieee8021FrerSequenceAutoconfigReceivePortList."
        REFERENCE   "10.7.2.1.3"
        ::= { ieee8021FrerOutputAutoconfigEntry 7 }

    ieee8021FrerOutputAutoconfigStatus OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Row-Status for the Output Autoconfiguration table."
        ::= { ieee8021FrerOutputAutoconfigEntry 8 }

    -- ============================================================
    -- the ieee8021FrerOutputAutoconfigPortHandleList table
    -- ============================================================
    ieee8021FrerOutputAutoconfigPortHandleListTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Ieee8021FrerOutputAutoconfigPortHandleListEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table containing a list of ports to which this
             frerAutOutEntry applies, and on which active Sequence
             encode/decode functions are to be autocreated, referenced in
             ieee8021FrerOutputAutoconfigIndex."
        REFERENCE   "10.7.2.1.1"
        ::= { ieee8021FrerOutputAutoconfigPortHandleList 16}

    ieee8021FrerOutputAutoconfigPortHandleListEntry OBJECT-TYPE
        SYNTAX      Ieee8021FrerOutputAutoconfigPortHandleListEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A set of managed objects providing the ports to which this
             frerAutOutEntry applies, and on which active Sequence
             encode/decode functions are to be autocreated, referenced in
```

```
          ieee8021FrerOutputAutoconfigIndex."
    REFERENCE   "10.7.2.1.1"
    INDEX   { ieee8021FrerOutputAutoconfigIndex,
              ieee8021FrerOutputAutoconfigPortHandleListIndex
            }
    ::= { ieee8021FrerOutputAutoconfigPortHandleListTable 1 }

Ieee8021FrerOutputAutoconfigPortHandleListEntry ::=
    SEQUENCE {
        ieee8021FrerOutputAutoconfigPortHandleListIndex
            Unsigned32,
        ieee8021FrerOutputAutoconfigPortHandle
            VariablePointer,
        ieee8021FrerOutputAutoconfigPortHandleListStatus
            RowStatus
    }

ieee8021FrerOutputAutoconfigPortHandleListIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index for the Output Autoconfiguration Port handle list
         table."
    ::= { ieee8021FrerOutputAutoconfigPortHandleListEntry 1 }

ieee8021FrerOutputAutoconfigPortHandle OBJECT-TYPE
    SYNTAX      VariablePointer
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "A pointer to the ieee8021StreamIdStreamIdHandle that is an
         element of the ieee8021FrerOutputAutoconfigPortList instance in
         the ieee8021FrerOutputAutoconfigTable."
    REFERENCE   "10.7.2.1.1"
    ::= { ieee8021FrerOutputAutoconfigPortHandleListEntry 2 }

ieee8021FrerOutputAutoconfigPortHandleListStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Row-Status for the Output Autoconfiguration Port handle list
         table."
    ::= { ieee8021FrerOutputAutoconfigPortHandleListEntry 3 }

-- ============================================================
-- the ieee8021FrerPerPortPerStreamCounters table
-- ============================================================

ieee8021FrerPerPortPerStreamCountersTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021FrerPerPortPerStreamCountersEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
            "A table containing a set of counters for frame replication
             and elimination for reliability that are instantiated per
             port, Stream, and direction."
    REFERENCE   "10.8"
    ::= { ieee8021FrerPerPortPerStreamCounters 17 }

ieee8021FrerPerPortPerStreamCountersEntry OBJECT-TYPE
    SYNTAX      Ieee8021FrerPerPortPerStreamCountersEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
            "A a set of managed objects for FRER counters that are
             instantiated per port, Stream, and direction."
    REFERENCE   "10.8"
     INDEX  { ifIndex,
              ieee8021StreamIdStreamIdHandle,
              ieee8021FrerPerPortPerStreamDirection
```

```
            }
    ::= { ieee8021FrerPerPortPerStreamCountersTable 1 }

Ieee8021FrerPerPortPerStreamCountersEntry ::=
    SEQUENCE {
        ieee8021FrerPerPortPerStreamDirection
            TruthValue,
        ieee8021FrerPerPortPerStreamSeqGenResets
            Counter64,
        ieee8021FrerPerPortPerStreamSeqRecoveryOutOfOrderPackets
            Counter64,
        ieee8021FrerPerPortPerStreamSeqRecoveryRoguePackets
            Counter64,
        ieee8021FrerPerPortPerStreamSeqRecoveryPassedPackets
            Counter64,
        ieee8021FrerPerPortPerStreamSeqRecoveryDiscardedPackets
            Counter64,
        ieee8021FrerPerPortPerStreamSeqRecoveryLostPackets
            Counter64,
        ieee8021FrerPerPortPerStreamSeqRecoveryTaglessPackets
            Counter64,
        ieee8021FrerPerPortPerStreamSeqRecoveryResets
            Counter64,
        ieee8021FrerPerPortPerStreamSeqRecoveryLatentErrorResets
            Counter64,
        ieee8021FrerPerPortPerStreamSeqEncErroredPackets
            Counter64
    }

ieee8021FrerPerPortPerStreamDirection OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A managed object specifying the facing of a given Stream
         on a port. The Stream can be either in-facing (False) or
         out-facing (True)."
    REFERENCE   "10.8"
    ::= { ieee8021FrerPerPortPerStreamCountersEntry 1 }

ieee8021FrerPerPortPerStreamSeqGenResets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented each
         time the SequenceGenerationReset function is called."
    REFERENCE   "10.8.2"
    ::= { ieee8021FrerPerPortPerStreamCountersEntry 2 }

ieee8021FrerPerPortPerStreamSeqRecoveryOutOfOrderPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         for each packet accepted out-of-order by the
         VectorRecoveryAlgorithm or MatchRecoveryAlgorithm. Out-of-order
         means that the packet's sequence number is not one more than
         the previous packet received."
    REFERENCE   "10.8.3"
    ::= { ieee8021FrerPerPortPerStreamCountersEntry 3 }

ieee8021FrerPerPortPerStreamSeqRecoveryRoguePackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         for each packet discarded by the VectorRecoveryAlgorithm
         because its sequence_number subparameter is more than
         ieee8021FrerSequenceRecoveryHistoryLength from RecovSeqNum."
```

```
    REFERENCE   "10.8.4"
    ::= { ieee8021FrerPerPortPerStreamCountersEntry 4 }

ieee8021FrerPerPortPerStreamSeqRecoveryPassedPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         for each packet passed up the stack by the
         VectorRecoveryAlgorithm or MatchRecoveryAlgorithm."
    REFERENCE   "10.8.5"
    ::= { ieee8021FrerPerPortPerStreamCountersEntry 5 }

ieee8021FrerPerPortPerStreamSeqRecoveryDiscardedPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         for each packet discarded due to a duplicate sequence number by
         the VectorRecoveryAlgorithm or MatchRecoveryAlgorithm."
    REFERENCE   "10.8.6"
    ::= { ieee8021FrerPerPortPerStreamCountersEntry 6 }

ieee8021FrerPerPortPerStreamSeqRecoveryLostPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         for each packet lost by the VectorRecoveryAlgorithm. A packet
         is counted as lost if its sequence number is not received on
         any ingress port"
    REFERENCE   "10.8.7"
    ::= { ieee8021FrerPerPortPerStreamCountersEntry 7 }

ieee8021FrerPerPortPerStreamSeqRecoveryTaglessPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         for each packet received by the VectorRecoveryAlgorithm that
         has no sequence number subparameter."
    REFERENCE   "10.8.8"
    ::= { ieee8021FrerPerPortPerStreamCountersEntry 8 }

ieee8021FrerPerPortPerStreamSeqRecoveryResets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         each time the SequenceRecoveryReset function is called."
    REFERENCE   "10.8.9"
    ::= { ieee8021FrerPerPortPerStreamCountersEntry 9 }

ieee8021FrerPerPortPerStreamSeqRecoveryLatentErrorResets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         each time the LatentErrorReset function is called."
    REFERENCE   "10.8.10"
    ::= { ieee8021FrerPerPortPerStreamCountersEntry 10 }

ieee8021FrerPerPortPerStreamSeqEncErroredPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
```

```
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         each time the Sequence encode/decode function receives a packet
         that it is unable to decode successfully."
    REFERENCE   "10.8.11"
    ::= { ieee8021FrerPerPortPerStreamCountersEntry 11 }

-- ============================================================
-- the ieee8021FrerPerPortCounters table
-- ============================================================

ieee8021FrerPerPortCountersTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Ieee8021FrerPerPortCountersEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a set of counters for frame replication
         and elimination for reliability that are instantiated per
         port and direction."
    REFERENCE   "10.9"
    ::= { ieee8021FrerPerPortCounters 18 }

ieee8021FrerPerPortCountersEntry OBJECT-TYPE
    SYNTAX      Ieee8021FrerPerPortCountersEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A a set of managed objects for FRER counters that are
         instantiated per port and direction."
    REFERENCE   "10.9"
     INDEX  { ifIndex }
    ::= { ieee8021FrerPerPortCountersTable 1 }

Ieee8021FrerPerPortCountersEntry ::=
    SEQUENCE {
        ieee8021FrerPerPortSeqRecoveryPassedPackets
            Counter64,
        ieee8021FrerPerPortfrerCpSeqRecoveryDiscardPackets
            Counter64,
        ieee8021FrerPerPortfrerCpSeqEncErroredPackets
            Counter64
    }

ieee8021FrerPerPortSeqRecoveryPassedPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         for each packet passed up the stack by the
         VectorRecoveryAlgorithm or MatchRecoveryAlgorithm. Its value
         equals the sum (modulo the size of the counters) of all of the
         ieee8021FrerPerPortPerStreamSeqRecoveryPassedPackets counters on
         this same port."
    REFERENCE   "10.9.1"
    ::= { ieee8021FrerPerPortCountersEntry 1 }

ieee8021FrerPerPortfrerCpSeqRecoveryDiscardPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         for each packet discarded due to a duplicate sequence number or
         for being a rogue packet by any VectorRecoveryAlgorithm or
         MatchRecoveryAlgorithm on this port. Its value equals the sum
         (modulo the size of the counters) of all of the
         ieee8021FrerPerPortPerStreamSeqRecoveryRoguePackets and
         ieee8021FrerPerPortPerStreamSeqRecoveryDiscardedPackets counters on
         this same port."
    REFERENCE   "10.9.2"
    ::= { ieee8021FrerPerPortCountersEntry 2 }
```

```
ieee8021FrerPerPortfrerCpSeqEncErroredPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A managed object serving as a counter that is incremented once
         each time the Sequence encode/decode function receives a packet
         that it is unable to decode successfully. Its value equals the
         sum (modulo the size of the counters) of all of the
         ieee8021FrerPerPortPerStreamSeqEncErroredPackets counters on
         this same port."
    REFERENCE   "10.9.3"
    ::= { ieee8021FrerPerPortCountersEntry 3 }

-- ================================================================
-- IEEE802 FRER MIB - Conformance Information
-- ================================================================

ieee8021FrerCompliances
    OBJECT IDENTIFIER ::= { ieee8021FrerConformance 1 }
ieee8021FrerGroups
    OBJECT IDENTIFIER ::= { ieee8021FrerConformance 2 }

-- ================================================================
-- units of conformance
-- ================================================================

-- ================================================================
-- the ieee8021FrerSequenceGeneration group
-- ================================================================

ieee8021FrerSequenceGenerationGroup OBJECT-GROUP
    OBJECTS {
        ieee8021FrerSequenceGenerationStreamList,
        ieee8021FrerSequenceGenerationDirection,
        ieee8021FrerSequenceGenerationReset,
        ieee8021FrerSequenceGenerationStreamHandle,
        ieee8021FrerSequenceGenerationHandleListStatus
    }
    STATUS      current
    DESCRIPTION
        "Objects that are part of the FRER sequence generation
         functionality."
    ::= { ieee8021FrerGroups 1 }

-- ================================================================
-- the ieee8021FrerSequenceRecovery group
-- ================================================================

ieee8021FrerSequenceRecoveryGroup OBJECT-GROUP
    OBJECTS {
        ieee8021FrerSequenceRecoveryStreamList,
        ieee8021FrerSequenceRecoveryPortList,
        ieee8021FrerSequenceRecoveryDirection,
        ieee8021FrerSequenceRecoveryReset,
        ieee8021FrerSequenceRecoveryAlgorithm,
        ieee8021FrerSequenceRecoveryAlgorithmOUI,
        ieee8021FrerSequenceCustomRecoveryAlgorithm,
        ieee8021FrerSequenceCustomRecoveryAlgorithmOUI,
        ieee8021FrerSequenceRecoveryHistoryLength,
        ieee8021FrerSequenceRecoveryResetMSec,
        ieee8021FrerSequenceRecoveryInvalidSequenceValue,
        ieee8021FrerSequenceRecoveryTakeNoSequence,
        ieee8021FrerSequenceRecoveryIndividualRecovery,
        ieee8021FrerSequenceRecoveryLatentErrorDetection,
        ieee8021FrerSequenceRecoveryLatentErrorDifference,
        ieee8021FrerSequenceRecoveryLatentErrorPeriod,
        ieee8021FrerSequenceRecoveryLatentErrorPaths,
        ieee8021FrerSequenceRecoveryLatentResetPeriod,
        ieee8021FrerSequenceRecoveryStatus,
        ieee8021FrerSequenceRecoveryStreamHandle,
```

```
            ieee8021FrerSequenceRecoveryHandleListStatus,
            ieee8021FrerSequenceRecoveryPortHandle,
            ieee8021FrerSequenceRecoveryPortHandleListStatus
        }
        STATUS      current
        DESCRIPTION
            "Objects that are part of the FRER sequence recovery
             functionality."
        ::= { ieee8021FrerGroups 2 }

    -- ============================================================
    -- the ieee8021FrerSequenceIdentification group
    -- ============================================================

    ieee8021FrerSequenceIdentificationGroup OBJECT-GROUP
        OBJECTS {
            ieee8021FrerSequenceIdentificationStreamList,
            ieee8021FrerSequenceIdentificationEncodeActive,
            ieee8021FrerSequenceIdentificationEncodeEncapsulationType,
            ieee8021FrerSequenceIdentificationEncodeEncapsulationOUI,
            ieee8021FrerSequenceIdentificationCustomEncodeEncapsulationType,
            ieee8021FrerSequenceIdentificationCustomEncodeEncapsulationOUI,
            ieee8021FrerSequenceIdentificationEncodePathIdLanId,
            ieee8021FrerSequenceIdentificationStatus,
            ieee8021FrerSequenceIdentificationStreamHandle,
            ieee8021FrerSequenceIdentificationHandleListStatus
        }
        STATUS      current
        DESCRIPTION
            "Objects that are part of the FRER sequence identification
             functionality."
        ::= { ieee8021FrerGroups 3 }

    -- ============================================================
    -- the ieee8021FrerStreamSplit group
    -- ============================================================

    ieee8021FrerStreamSplitGroup OBJECT-GROUP
        OBJECTS {
            ieee8021FrerStreamSplitPort,
            ieee8021FrerStreamSplitDirection,
            ieee8021FrerStreamSplitInputIdList,
            ieee8021FrerStreamSplitOutputIdList,
            ieee8021FrerStreamSplitInputIdHandle,
            ieee8021FrerStreamSplitInputHandleListStatus,
            ieee8021FrerStreamSplitOutputIdHandle,
            ieee8021FrerStreamSplitOutputHandleListStatus
        }
        STATUS      current
        DESCRIPTION
            "Objects that are part of the FRER Stream split functionality."
        ::= { ieee8021FrerGroups 4 }

    -- ============================================================
    -- the ieee8021FrerSequenceAutoconfig group
    -- ============================================================

    ieee8021FrerSequenceAutoconfigGroup OBJECT-GROUP
        OBJECTS {
            ieee8021FrerSequenceAutoconfigSequenceEncapsulation,
            ieee8021FrerSequenceAutoconfigSequenceEncapsulationOUI,
            ieee8021FrerSequenceAutoconfigCustomSequenceEncapsulation,
            ieee8021FrerSequenceAutoconfigCustomSequenceEncOUI,
            ieee8021FrerSequenceAutoconfigReceivePortList,
            ieee8021FrerSequenceAutoconfigTagged,
            ieee8021FrerSequenceAutoconfigVlanList,
            ieee8021FrerSequenceAutoconfigRecoveryPortList,
            ieee8021FrerSequenceAutoconfigDestructMSec,
            ieee8021FrerSequenceAutoconfigResetMSec,
            ieee8021FrerSequenceAutoconfigAlgorithm,
            ieee8021FrerSequenceAutoconfigAlgorithmOUI,
            ieee8021FrerSequenceAutoconfigCustomAlgorithm,
```

```
            ieee8021FrerSequenceAutoconfigCustomAlgorithmOUI,
            ieee8021FrerSequenceAutoconfigHistoryLength,
            ieee8021FrerSequenceAutoconfigCreateIndividual,
            ieee8021FrerSequenceAutoconfigCreateRecovery,
            ieee8021FrerSequenceAutoconfigLatentErrorDetection,
            ieee8021FrerSequenceAutoconfigLatentErrorDifference,
            ieee8021FrerSequenceAutoconfigLatentErrorPeriod,
            ieee8021FrerSequenceAutoconfigLatentErrorResetPeriod,
            ieee8021FrerSequenceAutoconfigStatus,
            ieee8021FrerSequenceAutoconfigReceivePortHandle,
            ieee8021FrerSequenceAutoconfigReceivePortHandleListStatus,
            ieee8021FrerSequenceAutoconfigVlan,
            ieee8021FrerSequenceAutoconfigVlanListStatus,
            ieee8021FrerSequenceAutoconfigRecoveryPortHandle,
            ieee8021FrerSequenceAutoconfigRecoveryPortHandleListStatus
        }
        STATUS      current
        DESCRIPTION
            "Objects that are part of the FRER sequence autoconfiguration
            functionality."
        ::= { ieee8021FrerGroups 5 }

    -- ============================================================
    -- the ieee8021FrerOutputAutoconfig group
    -- ============================================================

    ieee8021FrerOutputAutoconfigGroup OBJECT-GROUP
        OBJECTS {
            ieee8021FrerOutputAutoconfigPortList,
            ieee8021FrerOutputAutoconfigEncapsulation,
            ieee8021FrerOutputAutoconfigEncapsulationOUI,
            ieee8021FrerOutputAutoconfigCustomEncapsulation,
            ieee8021FrerOutputAutoconfigCustomEncapsulationOUI,
            ieee8021FrerOutputAutoconfigLanPathId,
            ieee8021FrerOutputAutoconfigStatus,
            ieee8021FrerOutputAutoconfigPortHandle,
            ieee8021FrerOutputAutoconfigPortHandleListStatus
        }
        STATUS      current
        DESCRIPTION
            "Objects that are part of the FRER output autoconfiguration
            functionality."
        ::= { ieee8021FrerGroups 6 }

    -- ============================================================
    -- the ieee8021FrerPerPortPerStreamCounters group
    -- ============================================================

    ieee8021FrerPerPortPerStreamCountersGroup OBJECT-GROUP
        OBJECTS {
            ieee8021FrerPerPortPerStreamSeqGenResets,
            ieee8021FrerPerPortPerStreamSeqRecoveryOutOfOrderPackets,
            ieee8021FrerPerPortPerStreamSeqRecoveryRoguePackets,
            ieee8021FrerPerPortPerStreamSeqRecoveryPassedPackets,
            ieee8021FrerPerPortPerStreamSeqRecoveryDiscardedPackets,
            ieee8021FrerPerPortPerStreamSeqRecoveryLostPackets,
            ieee8021FrerPerPortPerStreamSeqRecoveryTaglessPackets,
            ieee8021FrerPerPortPerStreamSeqRecoveryResets,
            ieee8021FrerPerPortPerStreamSeqRecoveryLatentErrorResets,
            ieee8021FrerPerPortPerStreamSeqEncErroredPackets
        }
        STATUS      current
        DESCRIPTION
            "Objects that provide information on the count of packets
             handled or actions taken by FRER algorithms per port, Stream,
             and direction."
        ::= { ieee8021FrerGroups 7 }

    -- ============================================================
    -- the ieee8021FrerPerPortCounters group
    -- ============================================================
```

```
ieee8021FrerPerPortCountersGroup OBJECT-GROUP
    OBJECTS {
        ieee8021FrerPerPortSeqRecoveryPassedPackets,
        ieee8021FrerPerPortfrerCpSeqRecoveryDiscardPackets,
        ieee8021FrerPerPortfrerCpSeqEncErroredPackets
    }
    STATUS      current
    DESCRIPTION
        "Objects that provide information on the count of packets
         handled by FRER per port and direction."
    ::= { ieee8021FrerGroups 8 }

-- ================================================================
-- compliance statements
-- ================================================================

ieee8021FrerCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "The compliance statement for devices supporting
        Stream identification."

    MODULE -- this module
        MANDATORY-GROUPS {
            ieee8021FrerSequenceGenerationGroup,
            ieee8021FrerSequenceRecoveryGroup,
            ieee8021FrerSequenceIdentificationGroup,
            ieee8021FrerStreamSplitGroup,
            ieee8021FrerPerPortPerStreamCountersGroup,
            ieee8021FrerPerPortCountersGroup
        }

        GROUP ieee8021FrerSequenceAutoconfigGroup
        DESCRIPTION
            "Implementation of this group is mandatory if the
             auto configuration feature is implemented."

        GROUP ieee8021FrerOutputAutoconfigGroup
        DESCRIPTION
            "Implementation of this group is mandatory if the
             auto configuration feature is implemented."

    ::= { ieee8021FrerCompliances 1 }

END
```

12. YANG Data Model

This clause specifies YANG data models that provide control and monitoring for all features of this standard. Specifically:

a) Stream Identification
b) Frame Replication and Elimination for Reliability

The YANG data management models are derived from UML models specified in 12.2. The UML models are based on Clause 9 and Clause 10.

NOTE 1—OMG UML 2.5 [B10] conventions are used in this clause as a representation to convey model structure and relationships.

NOTE 2—The MIB modules specified in Clause 11 were also derived from Clause 9 and Clause 10. Consequently, the capabilities and structure of the YANG data models are closely aligned with their MIB representations. However, the YANG data models have not been derived from the MIB modules, and no attempt has been made to include data or modeling constructs that might appear in the MIB modules but not in the information models.

12.1 YANG Framework

This clause has been developed according to the YANG guidelines published in IETF RFC 6087 [B5] as applicable to IEEE standards.

The YANG framework applies hierarchy in the following areas:

a) The uniform resource name (URN), as specified in IEEE Std 802d [B2a]. The structure of the URN is such that ieee is the root (i.e., name-space identifier), followed by the standard, then the working group developing the standard.
b) The YANG objects form a hierarchy of configuration and operational data structures that define the YANG model. These hierarchical relationships are described in 12.2.

The general YANG framework hierarchy is illustrated in Figure 12-1.

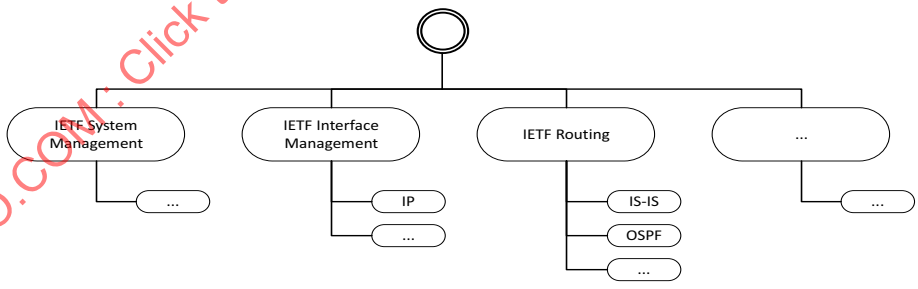

Figure 12-1—General YANG hierarchy

Network interfaces are central to the management of protocols supported over said interface. Thus, it is important to establish a common data model for how interfaces are identified, configured, and monitored. The IETF Interface Management model (IETF RFC 8343) defines a generic YANG data model for the management of network interfaces. Consequently, IEEE Std 802.1CB augments the generic interfaces data model defined by the IETF Interface Management model (IETF RFC 8343).

In addition, two high level YANG objects are defined to support IEEE Std 802.1CB features that exist at device level.

The YANG hierarchical structure that incorporates the IEEE Std 802.1CB YANG models supported by this standard is represented in Figure 12-2. Objects that are added by this standard are indicated by a darker shading.

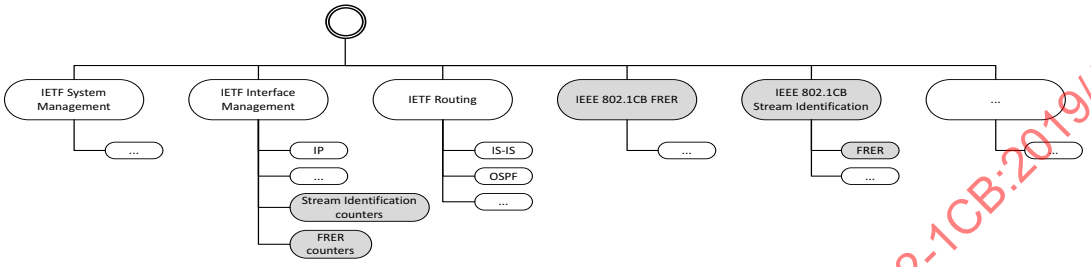

Figure 12-2—YANG root hierarchy with IEEE Std 802.1CB YANG modules

12.2 IEEE Std 802.1CB YANG model

The YANG data models are based on the management models outlined in Clause 9 and Clause 10. A UML representation of the management model is provided in the following subclauses.

The purpose of a UML-like[11] diagram is to express the model design on a single piece of paper. The structure of the UML-like representation shows the name of the object followed by a list of properties for the object. The properties indicate their type and accessibility. It should be noted that the UML-like representation is meant to express simplified semantics for the properties. It is not meant to provide the specific datatype as used to encode the object in either MIB or YANG. In the UML-like representation, a box with a white background represents information that comes from sources outside of the IEEE. A box with a gray background represents objects that are defined by this IEEE Standard.

12.2.1 Stream Identification model

The UML data model for Stream identification is illustrated in Figure 12-3.

[11]A description of the UML-like diagrams used in this clause is provided at https://1.ieee802.org/uml-like-diagrams

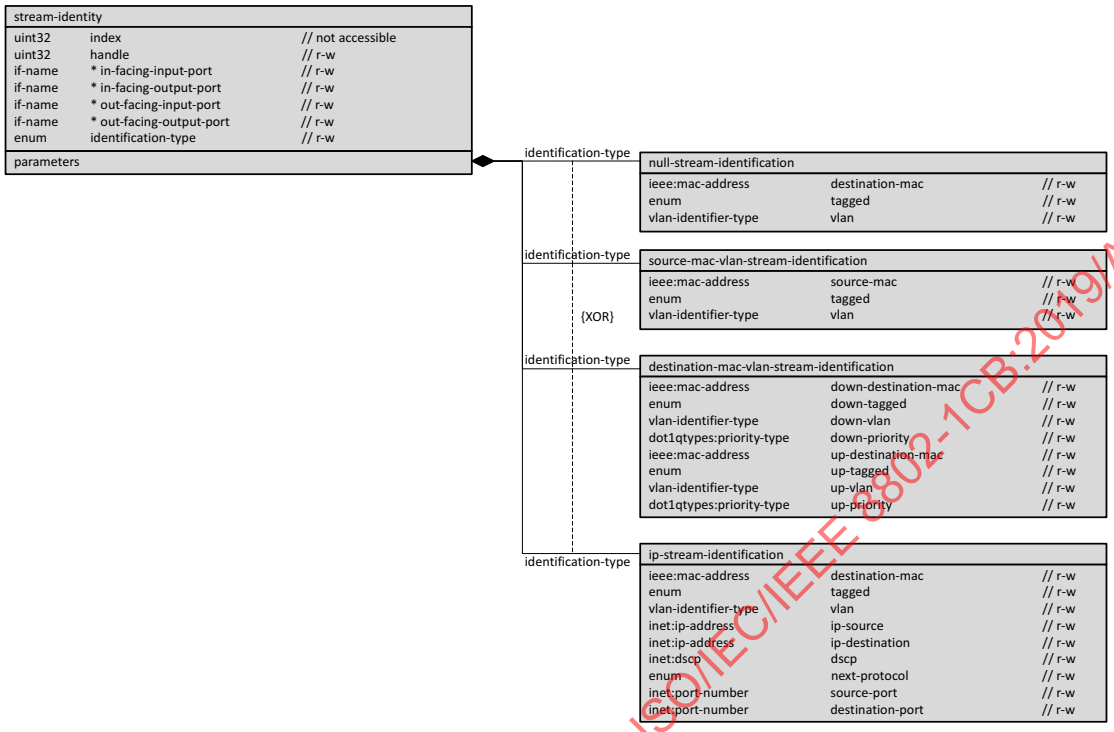

Figure 12-3—Stream identification model

The counters introduced with Stream identification augment the statistics from the Interface Management (IETF RFC 8343 [B9]) YANG model. The UML data model for the Stream identification counters is illustrated in Figure 12-4.

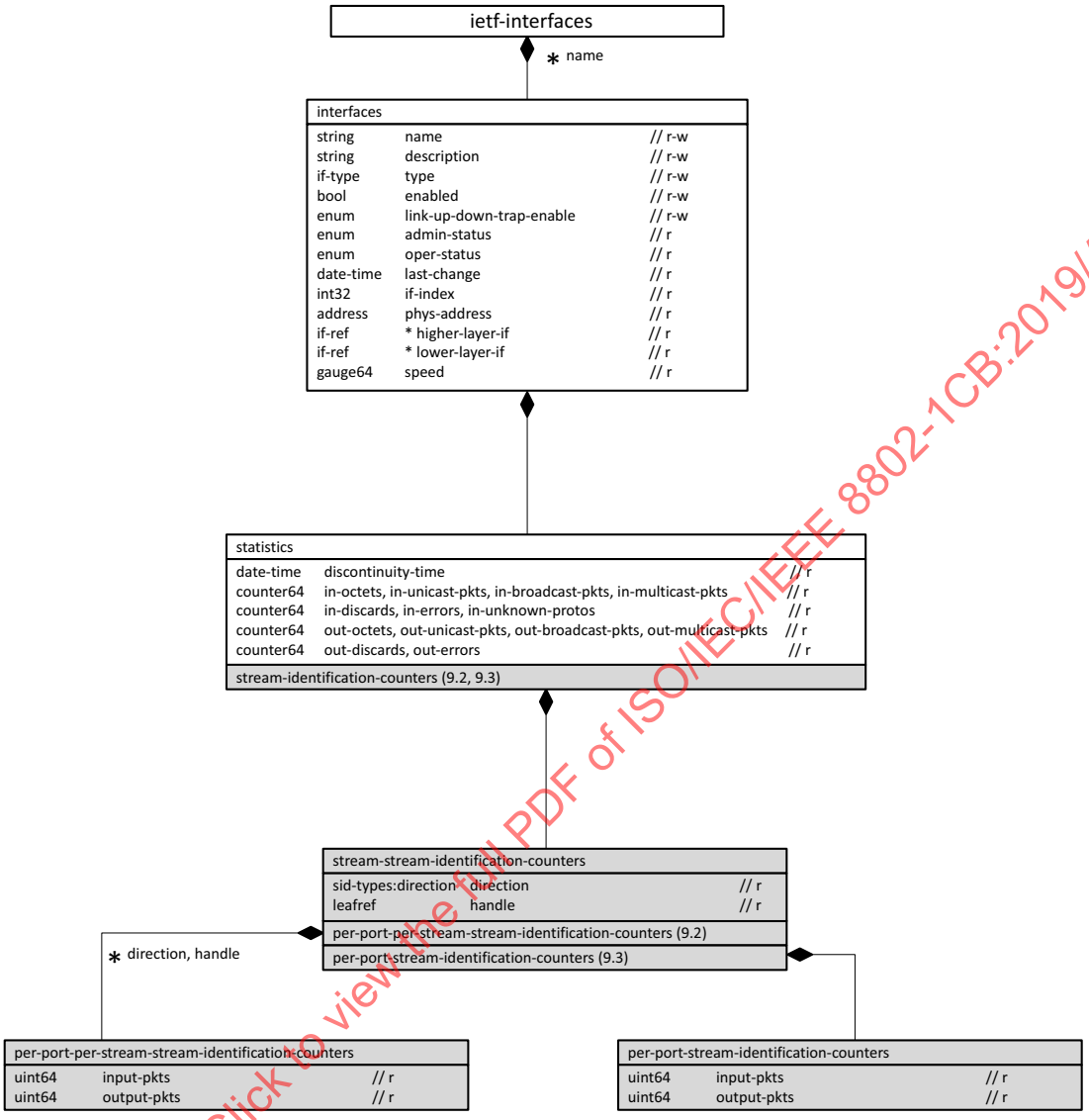

Figure 12-4—Stream identification counters model

12.2.2 Frame Replication and Elimination for Reliability model

The UML data model for FRER is illustrated in Figure 12-5. Additionally, FRER augments the Stream identification YANG model as illustrated in Figure 12-6.

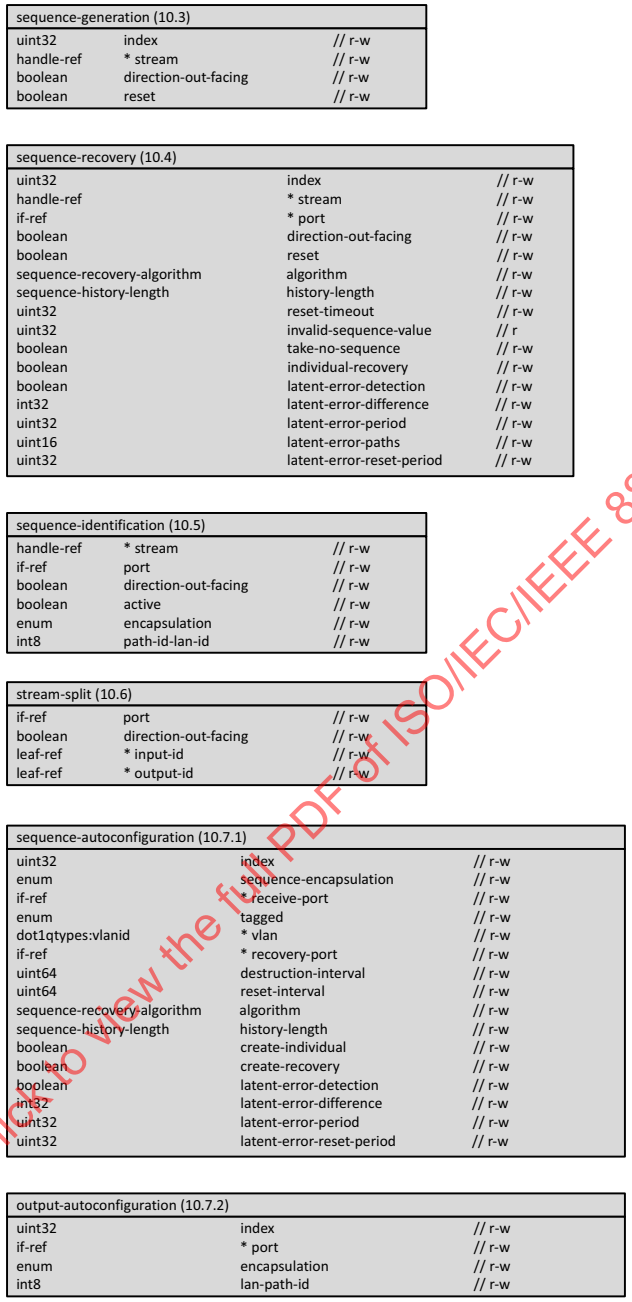

Figure 12-5—FRER model

stream-identity		
uint32	index	// not accessible
uint32	handle	// r-w
if-name	* in-facing-input-port	// r-w
if-name	* in-facing-output-port	// r-w
if-name	* out-facing-input-port	// r-w
if-name	* out-facing-output-port	// r-w
enum	identification-type	// r-w
parameters		
boolean	auto-configured;	// r
dot1cb-frer-types:lan-path-id	lan-path-id;	// r

Figure 12-6—FRER Stream identification augmentation

The counters introduced with FRER augment the statistics from the Interface Management (IETF RFC 8343 [B9]) YANG model. The UML data model for the FRER counters is illustrated in Figure 12-7.

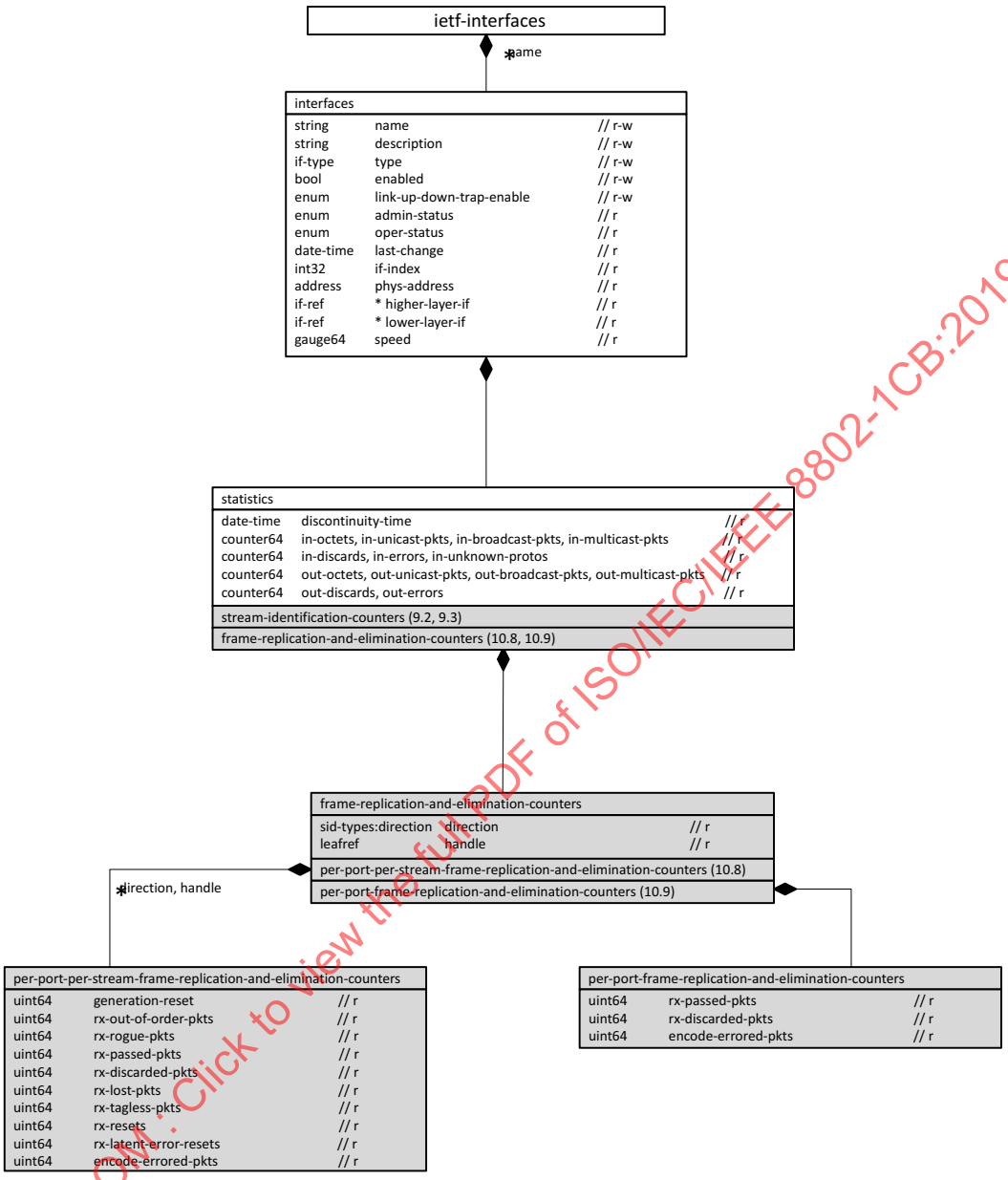

Figure 12-7—FRER counters model

12.3 Structure of the YANG model

IEEE Std 802.1CB YANG models are divided into a number of YANG modules. A summary of the modules contained in this clause is represented in Table 12-1.

The modules in Table 12-1 can be used to create a Stream Identification model or a FRER model.

Table 12-1—Description of the YANG modules

Module	References	Notes
ieee802-dot1cb-stream-identification-types	12.6.2.1	General type definitions used by IEEE Std 802.1CB Stream identification.
ieee802-dot1cb-stream-identification	12.6.2.2	YANG model for Stream identification.
ieee802-dot1cb-frer-types	12.6.2.3	General type definitions used by IEEE Std 802.1CB frame replication and elimination for reliability.
ieee802-dot1cb-frer	12.6.2.4	YANG model for FRER.

12.3.1 Structure of the ieee802-dot1cb-stream-identification YANG module

The Stream Identification model consists of the *ieee802-dot1cb-stream-identification* YANG module along with all the dependencies (YANG imports) that the module uses. Clause 12.6.1.1 contains the YANG data schema tree for the *ieee802-dot1cb-stream-identification* module.

The high-level structure of the *ieee802-dot1cb-stream-identification* YANG module is found in Table 12-2.

The list of YANG modules directly imported by the *ieee802-dot1cb-stream-identification* YANG module is found in Table 12-3.

Table 12-2—ieee802-dot1cb-stream-identification structure and relationship to this standard

Module	References	Notes
ieee802-dot1cb-stream-identification	9	—
stream-identity	9.1	Stream identity management within a system.
per-port-counters	9.3	Per-port counters for Stream identification.
per-port-per-stream-counters	9.2	Per-port-per-stream counters for Stream identification.

Table 12-3—YANG module dependencies for the Stream identification model

YANG module
ieee802-types
ieee802-dot1q-types
ietf-inet-types
ietf-interfaces
ieee802-dot1cb-stream-identification-types

To complete the model, all the dependencies from the imported modules must also be identified. The process to determine all the dependencies can be done through tooling. For example, if the pyang [B11] or

yanglint tool [B12] is used on the *ieee802-dot1cb-stream-identification* YANG module, the tooling will try to include all the imports and produce an error message if an import is missing. The YANG Catalog [B13] search tools and/or the YANG Catalog's github repository [B14] can be used to find the missing imports.

12.3.2 Structure of the ieee802-dot1cb-frer YANG module

The FRER model consists of the *ieee802-dot1cb-frer* YANG module along with all the dependencies (YANG imports) that the module uses. Clause 12.6.1.2 contains the YANG data schema tree for the *ieee802-dot1cb-frer* module.

The high-level structure of the *ieee802-dot1cb-frer* YANG module is found in Table 12-4.

The list of YANG modules directly imported by the *ieee802-dot1cb-frer* YANG module is found in Table 12-5.

Table 12-4—ieee802-dot1cb-frer structure and relationship to this standard

Module	References	Notes
ieee802-dot1cb-frer	10	—
sequence-generation	10.3	Sequence generation management within a system.
sequence-recovery	10.4	Sequence recovery management within a system.
sequence-identification	10.5	Sequence identification management within a system.
stream-split	10.6	Stream splitting management within a system.
autoconfiguration	10.7	Autoconfiguration management within a system.
per-port-counters	10.9	Per-port counters for FRER.
per-port-per-stream-counters	10.8	Per-port-per-stream counters for FRER.

Table 12-5—YANG module dependencies for the FRER model

YANG module
ieee802-dot1q-types
ietf-interfaces
ieee802-dot1cb-stream-identification-types
ieee802-dot1cb-stream-identification
ieee802-dot1cb-frer-types
ieee802-dot1cb-frer

To complete the model, all the dependencies from the imported modules must also be identified. The process to determine all the dependencies can be done through tooling. For example, if the pyang [B11] or yanglint tool [B12] is used on the *ieee802-dot1cb-frer* YANG module, the tooling will try to include all the imports and produce an error message if an import is missing. The YANG Catalog [B13] search tools and/or the YANG Catalog's github repository [B14] can be used to find the missing imports.

12.4 Relationship to other YANG modules

In order to facilitate interoperable management of the features defined in this standard by remote means, 12.6 contains a complete set of YANG modules. This clause describes how the YANG modules defined in this standard are related to the YANG modules that are imported.

12.4.1 IEEE 802 Types Module

The *ieee802-types* YANG module provides reusable types that are used in IEEE 802 standards.

The type for mac-addresses defined in *ieee802-types* has a pattern that allows upper and lower case letters. To avoid issues with string comparison, it is suggested to only use upper case for the letters in the hexadecimal numbers. Implementers using code comparing MAC addresses should note that there is still an issue with a difference between the IETF mac-address definition and the IEEE mac-address definition.

12.4.2 IEEE 802.1Q Types Module

The *ieee802-dot1q-types* YANG module provides reusable types that are used in IEEE 802.1 standards.

12.4.3 IETF Inet Types Module

The *ietf-inet-types* YANG module (IETF RFC 6021) provides reusable data types to be used with the YANG data modeling language.

12.4.4 IETF Interfaces YANG Module

The *ietf-interfaces* YANG module (IETF RFC 8343) contains a set of YANG definitions for managing network interfaces. This document models a port as an interface. Counters in the YANG modules defined in this document augment the interface statistics provided by *ietf-interfaces*.

12.4.5 IEEE 802.1CB Stream Identification Types YANG module

The *ieee802-dot1cb-stream-identification-types* YANG module provides reusable types that are used for IEEE 802.1CB Stream Identification.

12.4.6 IEEE 802.1CB Stream Identification YANG module

The *ieee802-dot1cb-stream-identification* YANG module defined in this standard provides Stream identification functionality and a Stream identification handle. The *ieee802-dot1cb-frer* YANG module that is also defined in this standard uses the Stream identification handle and also augments the Stream identification functionality.

12.4.7 IEEE 802.1CB FRER Types YANG module

The *ieee802-dot1cb-frer-types* YANG module provides reusable types that are used for IEEE 802.1CB frame replication and elimination for reliability.

12.5 Security Considerations

The YANG modules defined in this clause are designed to be accessed via a network configuration protocol, e.g., NETCONF protocol (IETF RFC 6242 [B7]). In the case of NETCONF, the lowest NETCONF layer is the secure transport layer and the mandatory to implement secure transport is SSH (IETF RFC 6242 [B7]). The NETCONF access control model (IETF RFC 6536 [B8]) provides the means to restrict access for particular NETCONF users to a preconfigured subset of all available NETCONF protocol operations and content.

It is the responsibility of a system's implementor and administrator to ensure that the protocol entities in the system that support NETCONF, and any other remote configuration protocols that make use of these YANG modules, are properly configured to allow access only to those principals (users) that have legitimate rights to read or write data nodes. This standard does not specify how the credentials of those users are to be stored or validated.

12.5.1 Security Considerations of the ieee802-dot1cb-stream-identification YANG module

There are a number of management objects defined in the *ieee802-dot1cb-stream-identification* YANG module that are configurable (i.e., read-write) and/or operational (i.e., read-only). Such objects may be considered sensitive or vulnerable in some network environments. A network configuration protocol, such as NETCONF (IETF RFC 6241 [B6]), can support protocol operations that can edit or delete YANG module configuration data (e.g., edit-config, delete-config, copy-config). If this is done in a non-secure environment without proper protection, then negative effects on the network operation is possible.

12.5.2 Security Considerations of the ieee802-dot1cb-frer YANG module

There are a number of management objects defined in the *ieee802-dot1cb-frer* YANG module that are configurable (i.e., read-write) and/or operational (i.e., read-only). Such objects may be considered sensitive or vulnerable in some network environments. A network configuration protocol, such as NETCONF (IETF RFC 6241 [B6]), can support protocol operations that can edit or delete YANG module configuration data (e.g., edit-config, delete-config, copy-config). If this is done in a non-secure environment without proper protection, then negative effects on the network operation are possible.

12.6 Definition of 802.1CB YANG modules[12] [13]

The structure of the YANG modules related to this standard is described in 12.3. In the following YANG module definitions, if any discrepancy between the DESCRIPTION text and the corresponding definition in any other part of this standard occurs, the definitions outside this subclause take precedence.

12.6.1 YANG data scheme tree definitions

A simplified graphical representation of the data model is used in this document. The meaning of the symbols in these diagrams is as follows:

— Brackets "[" and "]" enclose list keys.
— Abbreviations before data node names: "rw" means configuration (read-write), and "ro" means state data (read-only).

[12] Copyright release for YANG modules: Users of this standard may freely reproduce the YANG modules contained in this subclause so that they can be used for their intended purpose.

[13] An ASCII version of the YANG modules are attached to the PDF version of this standard, and can be obtained by Web browser from the IEEE 802.1 Website at https://1.ieee802.org/yang-modules/.

— Symbols after data node names: "?" means an optional node, "!" means a presence container, and "*" denotes a list and leaf-list.
— Parentheses enclose choice and case nodes, and case nodes are also marked with a colon (":").
— Ellipsis ("...") stands for contents of subtrees that are not shown.

12.6.1.1 YANG data scheme definition for ieee802-dot1cb-stream-identification YANG module

```
module: ieee802-dot1cb-stream-identification
  +--rw stream-identity* [index]
     +--rw index                                        uint32
     +--rw handle                                       uint32
     +--rw in-facing
     |  +--rw input-port*    if:interface-ref
     |  +--rw output-port*   if:interface-ref
     +--rw out-facing
     |  +--rw input-port*    if:interface-ref
     |  +--rw output-port*   if:interface-ref
     +--rw (parameters)
        +--:(null-stream-identification)
        |  +--rw null-stream-identification
        |     +--ro identification-type
        |     |  +--ro type-number?   dot1cb-sid-types:stream-id-function
        |     |  +--ro oui-cid?       string
        |     +--rw destination-mac?      ieee:mac-address
        |     +--rw tagged?               vlan-tag-identification-type
        |     +--rw vlan?                 vlan-identifier-type
        +--:(smac-vlan-stream-identification)
        |  +--rw smac-vlan-stream-identification
        |     +--ro identification-type
        |     |  +--ro type-number?   dot1cb-sid-types:stream-id-function
        |     |  +--ro oui-cid?       string
        |     +--rw source-mac?           ieee:mac-address
        |     +--rw tagged?               vlan-tag-identification-type
        |     +--rw vlan?                 vlan-identifier-type
        +--:(dmac-vlan-stream-identification)
        |  +--rw dmac-vlan-stream-identification
        |     +--ro identification-type
        |     |  +--ro type-number?   dot1cb-sid-types:stream-id-function
        |     |  +--ro oui-cid?       string
        |     +--rw down
        |     |  +--rw destination-mac?   ieee:mac-address
        |     |  +--rw tagged?            vlan-tag-identification-type
        |     |  +--rw vlan?              vlan-identifier-type
        |     |  +--rw priority?          dot1qtypes:priority-type
        |     +--rw up
        |        +--rw destination-mac?   ieee:mac-address
```

```
      |        +--rw tagged?            vlan-tag-identification-type
      |        +--rw vlan?              vlan-identifier-type
      |        +--rw priority?          dot1qtypes:priority-type
      +--:(ip-stream-identification)
      |  +--rw ip-stream-identification
      |     +--ro identification-type
      |     |  +--ro type-number?   dot1cb-sid-types:stream-id-function
      |     |  +--ro oui-cid?       string
      |     +--rw destination-mac?       ieee:mac-address
      |     +--rw tagged?                vlan-tag-identification-type
      |     +--rw vlan?                  vlan-identifier-type
      |     +--rw ip-source?             inet:ip-address
      |     +--rw ip-destination?        inet:ip-address
      |     +--rw dscp?                  inet:dscp
      |     +--rw next-protocol?         enumeration
      |     +--rw source-port?           inet:port-number
      |     +--rw destination-port?      inet:port-number
      +--:(organization-specific)
         +--rw organization-specific
            +--rw identification-type
               +--rw type-number?   int32
               +--rw oui-cid?       string

augment /if:interfaces/if:interface/if:statistics:
  +--ro stream-id
     +--ro per-port-counters
     |  +--ro input-pkts?    uint64
     |  +--ro output-pkts?   uint64
     +--ro per-port-per-stream-counters* [direction-out-facing handle]
        +--ro direction-out-facing    dot1cb-sid-types:direction
        +--ro handle                  -> /stream-identity/handle
        +--ro input-pkts?             uint64
        +--ro output-pkts?            uint64
```

12.6.1.2 YANG data scheme definition for ieee802-dot1cb-frer YANG module

```
module: ieee802-dot1cb-frer
  +--rw frer
     +--rw sequence-generation* [index]
     |  +--rw index                   uint32
     |  +--rw stream*                 -> /dot1cb-sid:stream-identity/handle
     |  +--rw direction-out-facing?   dot1cb-sid-types:direction
     |  +--rw reset?                  boolean
     +--rw sequence-recovery* [index]
     |  +--rw index                                uint32
```

```
|  +--rw stream*
|  |       -> /dot1cb-sid:stream-identity/handle
|  +--rw port*                                  if:interface-ref
|  +--rw direction-out-facing?                  dot1cb-sid-types:direction
|  +--rw reset?                                 boolean
|  +--rw algorithm
|  |  +--rw (algorithm)?
|  |     +--:(vector)
|  |     |  +--rw vector!
|  |     |     +--ro type-number?   dot1cb-frer-types:seq-rcvy-algorithm
|  |     |     +--ro oui-cid?       string
|  |     +--:(match)
|  |     |  +--rw match!
|  |     |     +--ro type-number?   dot1cb-frer-types:seq-rcvy-algorithm
|  |     |     +--ro oui-cid?       string
|  |     +--:(organization-specific)
|  |        +--rw organization-specific!
|  |           +--rw type-number?   int32
|  |           +--rw oui-cid?       string
|  +--rw history-length?                        sequence-history-length
|  +--rw reset-timeout?                         uint32
|  +--ro invalid-sequence-value?                uint32
|  +--rw take-no-sequence?                      boolean
|  +--rw individual-recovery?                   boolean
|  +--rw latent-error-detection?                boolean
|  +--rw latent-error-detection-parameters
|     +--rw difference?   int32
|     +--rw period?       uint32
|     +--rw paths?        uint16
|     +--rw reset-period?   uint32
+--rw sequence-identification* [port direction-out-facing]
|  +--rw stream*                -> /dot1cb-sid:stream-identity/handle
|  +--rw port                   if:interface-ref
|  +--rw direction-out-facing   dot1cb-sid-types:direction
|  +--rw active?                boolean
|  +--rw encapsulation
|  |  +--rw (encapsulation)?
|  |     +--:(r-tag)
|  |     |  +--rw r-tag!
|  |     |     +--ro type-number?   dot1cb-frer-types:seq-encaps-method
|  |     |     +--ro oui-cid?       string
|  |     +--:(hsr-sequence-tag)
|  |     |  +--rw hsr-sequence-tag!
|  |     |     +--ro type-number?   dot1cb-frer-types:seq-encaps-method
|  |     |     +--ro oui-cid?       string
|  |     +--:(prp-sequence-tag)
```

```
|  |     |  +--rw prp-sequence-tag!
|  |     |     +--ro type-number?   dot1cb-frer-types:seq-encaps-method
|  |     |     +--ro oui-cid?       string
|  |     +--:(organization-specific)
|  |        +--rw organization-specific!
|  |           +--rw type-number?   int32
|  |           +--rw oui-cid?       string
|  +--rw path-id-lan-id?         lan-path-id
+--rw stream-split* [port direction-out-facing]
|  +--rw port                    if:interface-ref
|  +--rw direction-out-facing    dot1cb-sid-types:direction
|  +--rw input-id*               -> /dot1cb-sid:stream-identity/handle
|  +--rw output-id*              -> /dot1cb-sid:stream-identity/handle
+--rw autoconfiguration {auto-configuration}?
   +--rw sequence* [index]
   |  +--rw index                          uint32
   |  +--rw sequence-encapsulation
   |  |  +--rw (encapsulation)?
   |  |     +--:(r-tag)
   |  |     |  +--rw r-tag!
   |  |     |     +--ro type-number?
   |  |     |     |       dot1cb-frer-types:seq-encaps-method
   |  |     |     +--ro oui-cid?       string
   |  |     +--:(hsr-sequence-tag)
   |  |     |  +--rw hsr-sequence-tag!
   |  |     |     +--ro type-number?
   |  |     |     |       dot1cb-frer-types:seq-encaps-method
   |  |     |     +--ro oui-cid?       string
   |  |     +--:(prp-sequence-tag)
   |  |     |  +--rw prp-sequence-tag!
   |  |     |     +--ro type-number?
   |  |     |     |       dot1cb-frer-types:seq-encaps-method
   |  |     |     +--ro oui-cid?       string
   |  |     +--:(organization-specific)
   |  |        +--rw organization-specific!
   |  |           +--rw type-number?   int32
   |  |           +--rw oui-cid?       string
   |  +--rw receive-port*                if:interface-ref
   |  +--rw tagged?                      enumeration
   |  +--rw vlan*                        dot1qtypes:vlanid
   |  +--rw recovery-port*               if:interface-ref
   |  +--rw destruction-interval?        uint64
   |  +--rw reset-interval?              uint64
   |  +--rw algorithm
   |  |  +--rw (algorithm)?
   |  |     +--:(vector)
```

```
|  |     |  +--rw vector!
|  |     |     +--ro type-number?
|  |     |     |       dot1cb-frer-types:seq-rcvy-algorithm
|  |     |     +--ro oui-cid?       string
|  |     +--:(match)
|  |     |  +--rw match!
|  |     |     +--ro type-number?
|  |     |     |       dot1cb-frer-types:seq-rcvy-algorithm
|  |     |     +--ro oui-cid?       string
|  |     +--:(organization-specific)
|  |        +--rw organization-specific!
|  |           +--rw type-number?   int32
|  |           +--rw oui-cid?       string
|  +--rw history-length?              sequence-history-length
|  +--rw create-individual?           boolean
|  +--rw create-recovery?             boolean
|  +--rw latent-error-detection?      boolean
|  +--rw latent-error-difference?     int32
|  +--rw latent-error-period?         uint32
|  +--rw latent-error-reset-period?   uint32
+--rw output* [index]
   +--rw index            uint32
   +--rw port*            if:interface-ref
   +--rw encapsulation
   |  +--rw (encapsulation)?
   |     +--:(r-tag)
   |     |  +--rw r-tag!
   |     |     +--ro type-number?
   |     |     |       dot1cb-frer-types:seq-encaps-method
   |     |     +--ro oui-cid?       string
   |     +--:(hsr-sequence-tag)
   |     |  +--rw hsr-sequence-tag!
   |     |     +--ro type-number?
   |     |     |       dot1cb-frer-types:seq-encaps-method
   |     |     +--ro oui-cid?       string
   |     +--:(prp-sequence-tag)
   |     |  +--rw prp-sequence-tag!
   |     |     +--ro type-number?
   |     |     |       dot1cb-frer-types:seq-encaps-method
   |     |     +--ro oui-cid?       string
   |     +--:(organization-specific)
   |        +--rw organization-specific!
   |           +--rw type-number?   int32
   |           +--rw oui-cid?       string
   +--rw lan-path-id?     lan-path-id
```

```
augment /dot1cb-sid:stream-identity:
  +--ro auto-configured?   boolean {auto-configuration}?
  +--rw lan-path-id?       lan-path-id {auto-configuration}?
augment /if:interfaces/if:interface/if:statistics:
  +--ro frer
     +--ro per-port-counters
     |  +--ro rx-passed-pkts?        uint64
     |  +--ro rx-discarded-pkts?     uint64
     |  +--ro encode-errored-pkts?   uint64
     +--ro per-port-per-stream-counters* [direction-out-facing handle]
        +--ro direction-out-facing      dot1cb-sid-types:direction
        +--ro handle
        |       -> /dot1cb-sid:stream-identity/handle
        +--ro generation-reset?         uint64
        +--ro rx-out-of-order-pkts?     uint64
        +--ro rx-rogue-pkts?            uint64
        +--ro rx-passed-pkts?           uint64
        +--ro rx-discarded-pkts?        uint64
        +--ro rx-lost-pkts?             uint64
        +--ro rx-tagless-pkts?          uint64
        +--ro rx-resets?                uint64
        +--ro rx-latent-error-resets?   uint64
        +--ro encode-errored-pkts?      uint64
```

12.6.2 YANG data module definitions

12.6.2.1 Definition for the ieee802-dot1cb-stream-identification-types YANG module

```
module ieee802-dot1cb-stream-identification-types {
  yang-version "1.1";
  namespace
    urn:ieee:std:802.1Q:yang:ieee802-dot1cb-stream-identification-types;
  prefix dot1cb-sid-types;
  organization
    "Institute of Electrical and Electronics Engineers";
  contact
    "WG-URL: http://ieee802.org/1/
    WG-EMail: stds-802-1-l@ieee.org

    Contact: IEEE 802.1 Working Group Chair
    Postal: C/O IEEE 802.1 Working Group
            IEEE Standards Association
            445 Hoes Lane
            Piscataway, NJ 08854
```

```
          USA

  E-mail: stds-802-1-chairs@ieee.org";
description
  "Management objects that control the Stream identification from IEEE
  Std 802.1CB-2017. This YANG data model conforms to the Network
  Management Datastore Architecture defined in RFC 8342. Copyright (C)
  IEEE (2021). This version of this YANG module is part of IEEE Std
  802.1CBcv; see the standard itself for full legal notices.";
revision 2021-12-08 {
  description
    "Published as part of IEEE Std 802.1CBcv-2021. Initial version.";
  reference
    "IEEE Std 802.1CBcv-2021, Frame Replication and Elimination for
    Reliability - FRER YANG Data Model and Management Information Base
    Module.";
}
identity strid-idty {
  description
    "Root identity for all Stream identification types";
}
typedef direction {
  type boolean;
  description
    "A boolean object indicating whether the direction is out-facing
    (True) or in-facing (False).";
  reference
    "10.4.1.3 of IEEE Std 802.1CB-2017";
}
typedef stream-id-function {
  type enumeration {
    enum reserved {
      value 0;
      description
        "Reserved value.";
    }
    enum null-stream {
      value 1;
      description
        "The Stream identification type used for the Null Stream
        identification method.";
    }
    enum smac-vlan {
      value 2;
      description
        "The Stream identification type used for the Source MAC and
```

```
            VLAN Stream identification method.";
        }
        enum dmac-vlan {
          value 3;
          description
            "The Stream identification type used for the Active Destination
            MAC and VLAN Stream identification method.";
        }
        enum ip {
          value 4;
          description
            "The Stream identification type used for the IP Stream
            identification method.";
        }
      }
      description
        "An enumerated value indicating the method used to identify packets
        belonging to a Stream.";
      reference
        "9.1.1.6 of IEEE Std 802.1CB-2017";
    }
}
```

12.6.2.2 Definition for the ieee802-dot1cb-stream-identification YANG module

```
module ieee802-dot1cb-stream-identification {
  yang-version "1.1";
  namespace urn:ieee:std:802.1Q:yang:ieee802-dot1cb-stream-identification;
  prefix dot1cb-sid;
  import ieee802-types {
    prefix ieee;
  }
  import ieee802-dot1q-types {
    prefix dot1qtypes;
  }
  import ietf-inet-types {
    prefix inet;
  }
  import ietf-interfaces {
    prefix if;
  }
  import ieee802-dot1cb-stream-identification-types {
    prefix dot1cb-sid-types;
  }
```

```
organization
  "Institute of Electrical and Electronics Engineers";
contact
  "WG-URL: http://ieee802.org/1/
  WG-EMail: stds-802-1-l@ieee.org

  Contact: IEEE 802.1 Working Group Chair
  Postal: C/O IEEE 802.1 Working Group
          IEEE Standards Association
          445 Hoes Lane
          Piscataway, NJ 08854
          USA

  E-mail: stds-802-1-chairs@ieee.org";
description
  "Management objects that control the Stream identification from IEEE
  Std 802.1CB-2017. This YANG data model conforms to the Network
  Management Datastore Architecture defined in RFC 8342. Copyright (C)
  IEEE (2021). This version of this YANG module is part of IEEE Std
  802.1CBcv; see the standard itself for full legal notices.";
revision 2021-12-08 {
  description
    "Published as part of IEEE Std 802.1CBcv-2021. Initial version.";
  reference
    "IEEE Std 802.1CBcv-2021, Frame Replication and Elimination for
    Reliability - FRER YANG Data Model and Management Information Base
    Module.";
}
identity null-stream-identification {
  base dot1cb-sid-types:strid-idty;
  description
    "Null Stream identification";
}
identity smac-vlan-stream-identification {
  base dot1cb-sid-types:strid-idty;
  description
    "Source MAC and VLAN Stream identification";
}
identity dmac-vlan-stream-identification {
  base dot1cb-sid-types:strid-idty;
  description
    "Active Destination MAC and VLAN Stream identification";
}
identity ip-stream-identification {
  base dot1cb-sid-types:strid-idty;
  description
```

```
    "IP Stream identification";
}
typedef vlan-tag-identification-type {
  type enumeration {
    enum tagged {
      value 1;
      description
        "A frame must have a VLAN tag to be recognized as belonging to
        the Stream.";
    }
    enum priority {
      value 2;
      description
        "A frame must be untagged, or have a VLAN tag with a VLAN ID =
        0 to be recognized as belonging to the Stream.";
    }
    enum all {
      value 3;
      description
        "A frame is recognized as belonging to the Stream whether
        tagged or not.";
    }
  }
  description
    "Enumeration describing how a Stream can be identified using the
    VLAN tag.";
}
typedef vlan-identifier-type {
  type uint16 {
    range "0 .. 4095";
  }
  description
    "Specifies the vlan_identifier. A value of 0 indicates that the
    vlan_identifier carries a special meaning.";
}
list stream-identity {
  key "index";
  description
    "The Stream identity table consists of a set of tsnStreamIdEntry
    objects, each relating to a single Stream, specifying the points in
    the system where Stream identification functions are to be
    instantiated. Each entry in the Stream identity table has a
    tsnStreamIdHandle object specifying a stream_handle value and one
    or more tsnStreamIdEntry objects describing one identification
    method for that Stream. If a single Stream has multiple
    identification methods, perhaps (but not necessarily) on different
```

```
    ports, then there can be multiple tsnStreamIdEntry objects with the
    same value for the tsnStreamIdHandle. If the HSR or PRP method or
    the Sequence encode/decode function is applied to a packet, then
    the LanId or PathId fields are also used to identify the Stream to
    which the packet belongs.";
  reference
    "9.1. of IEEE Std 802.1CB-2017";
  leaf index {
    type uint32;
    description
      "If a single Stream has multiple identification methods, perhaps
      (but not necessarily) on different ports, then there can be
      multiple tsnStreamIdEntry objects with the same value for the
      tsnStreamIdHandle";
  }
  leaf handle {
    type uint32;
    mandatory true;
    description
      "The objects in a given entry of the Stream identity table are
      used to control packets whose stream_handle subparameter is equal
      to the entry's tsnStreamIdHandle object. The specific values used
      in the tsnStreamIdHandle object are not necessarily used in the
      system; they are used only to relate the various management
      objects in Clause 9 and Clause 10.";
    reference
      "9.1.1.1 of IEEE Std 802.1CB-2017";
  }
  container in-facing {
    description
      "Container for in-facing Stream identification functions.";
    leaf-list input-port {
      type if:interface-ref;
      description
        "The list of ports on which an in-facing Stream identification
        function using this identification method is to be placed for
        this Stream in the input (coming from the system forwarding
        function) direction. Any number of tsnStreamIdEntry objects can
        list the same port for the same tsnStreamIdHandle in its
        tsnStreamIdInFacInputPortList.";
      reference
        "9.1.1.4 of IEEE Std 802.1CB-2017";
    }
    leaf-list output-port {
      type if:interface-ref;
      description
```

```
        "The list of ports on which an in-facing Stream identification
        function using this identification method is to be placed for
        this Stream in the output (towards the system forwarding
        function) direction. At most one tsnStreamIdEntry can list a
        given port for a given tsnStreamIdHandle in its
        tsnStreamIdInFacOutputPortList.";
      reference
        "9.1.1.2 of IEEE Std 802.1CB-2017";
    }
  }
  container out-facing {
    description
      "Container for out-facing Stream identification functions.";
    leaf-list input-port {
      type if:interface-ref;
      description
        "The list of ports on which an out-facing Stream identification
        function using this identification method is to be placed for
        this Stream in the input (coming from the physical interface)
        direction. Any number of tsnStreamIdEntry objects can list the
        same port for the same tsnStreamIdHandle in its
        tsnStreamIdOutFacInputPortList.";
      reference
        "9.1.1.5 of IEEE Std 802.1CB-2017";
    }
    leaf-list output-port {
      type if:interface-ref;
      description
        "The list of ports on which an out-facing Stream identification
        function using this identification method is to be placed for
        this Stream in the output (towards the physical interface)
        direction. At most one tsnStreamIdEntry can list a given port
        for a given tsnStreamIdHandle in its
        tsnStreamIdOutFacOutputPortList.";
      reference
        "9.1.1.3 of IEEE Std 802.1CB-2017";
    }
  }
  choice parameters {
    mandatory true;
    description
      "The number of controlling parameters for a Stream identification
      method, their types and values, are specific to the
      tsnStreamIdIdentificationType.";
    reference
      "9.1.1.7 of IEEE Std 802.1CB-2017";
```

```
container null-stream-identification {
  description
    "When instantiating an instance of the Null Stream
    identification function for a particular input Stream, the
    managed objects in this container serve as the
    tsnStreamIdParameters managed object.";
  reference
    "9.1.2 of IEEE Std 802.1CB-2017";
  container identification-type {
    config false;
    description
      "The identification type indicating the method used to
      identify packets belonging to the Stream. The identification
      type contains a type number and an Organizationally Unique
      Identifier (OUI) or Company ID (CID) to identify the
      organization defining the identification method.";
    reference
      "9.1.1.6 of IEEE Std 802.1CB-2017";
    leaf type-number {
      type dot1cb-sid-types:stream-id-function;
      default "null-stream";
      description
        "The Stream identification type used for the Null Stream
        identification method.";
      reference
        "9.1.1.6 of IEEE Std 802.1CB-2017";
    }
    leaf oui-cid {
      type string {
        pattern "[0-9A-F]{2}(-[0-9A-F]{2}){2}";
      }
      default "00-80-C2";
      description
        "The Organizationally Unique Identifier (OUI) or Company ID
        (CID) to identify the organization defining the
        identification method. For identification methods defined
        in IEEE Std 802.1CB-2017 the OUI/CID is always 00-80-C2.";
      reference
        "9.1.1.6 of IEEE Std 802.1CB-2017";
    }
  }
  leaf destination-mac {
    type ieee:mac-address;
    description
      "Specifies the destination_address that identifies a packet
      in an EISS indication primitive, to the Null Stream
```

```
        identification function. The ieee:mac-address type has a
        pattern that allows upper and lower case letters. To avoid
        issues with string comparison, it is suggested to only use
        upper case for the letters in the hexadecimal numbers. There
        is still an issue with a difference between the IETF
        mac-address definition and the IEEE mac-address definition,
        so consider that if implementing code that compares
        mac-addresses.";
      reference
        "9.1.2.1 of IEEE Std 802.1CB-2017";
    }
    leaf tagged {
      type vlan-tag-identification-type;
      description
        "An enumerated value indicating whether a packet in an EISS
        indication primitive to the Null Stream identification
        function is permitted to have a VLAN tag.";
      reference
        "9.1.2.2 of IEEE Std 802.1CB-2017";
    }
    leaf vlan {
      type vlan-identifier-type;
      description
        "Specifies the vlan_identifier parameter that identifies a
        packet in an EISS indication primitive to the Null Stream
        identification function. A value of 0 indicates that the
        vlan_identifier parameter is ignored on EISS indication
        primitives.";
      reference
        "9.1.2.3 of IEEE Std 802.1CB-2017";
    }
  }
  container smac-vlan-stream-identification {
    description
      "When instantiating an instance of the Source MAC and VLAN
      Stream identification function for a particular input Stream,
      the managed objects in the following subclauses serve as the
      tsnStreamIdParameters managed object.";
    reference
      "9.1.3 of IEEE Std 802.1CB-2017";
    container identification-type {
      config false;
      description
        "The identification type indicating the method used to
        identify packets belonging to the Stream. The identification
        type contains a type number and an Organizationally Unique
```

```
        Identifier (OUI) or Company ID (CID) to identify the
        organization defining the identification method.";
      reference
        "9.1.1.6 of IEEE Std 802.1CB-2017";
      leaf type-number {
        type dot1cb-sid-types:stream-id-function;
        default "smac-vlan";
        description
          "The Stream identification type used for the Source MAC and
          VLAN Stream identification method.";
        reference
          "9.1.1.6 of IEEE Std 802.1CB-2017";
      }
      leaf oui-cid {
        type string {
          pattern "[0-9A-F]{2}(-[0-9A-F]{2}){2}";
        }
        default "00-80-C2";
        description
          "The Organizationally Unique Identifier (OUI) or Company ID
          (CID) to identify the organization defining the
          identification method. For identification methods defined
          in IEEE Std 802.1CB-2017 the OUI/CID is always 00-80-C2.";
        reference
          "9.1.1.6 of IEEE Std 802.1CB-2017";
      }
    }
    leaf source-mac {
      type ieee:mac-address;
      description
        "Specifies the source_address that identifies a packet in an
        EISS indication primitive, to the Source MAC and VLAN Stream
        identification function. The ieee:mac-address type has a
        pattern that allows upper and lower case letters. To avoid
        issues with string comparison, it is suggested to only use
        upper case for the letters in the hexadecimal numbers. There
        is still an issue with a difference between the IETF
        mac-address definition and the IEEE mac-address definition,
        so consider that if implementing code that compares
        mac-addresses.";
      reference
        "9.1.3.1 of IEEE Std 802.1CB-2017";
    }
    leaf tagged {
      type vlan-tag-identification-type;
      description
```

```
        "An enumerated value indicating whether a packet in an EISS
        indication primitive to the Source MAC and VLAN Stream
        identification function is permitted to have a VLAN tag.";
      reference
        "9.1.3.2 of IEEE Std 802.1CB-2017";
    }
    leaf vlan {
      type vlan-identifier-type;
      description
        "Specifies the vlan_identifier parameter that identifies a
        packet in an EISS indication primitive to the Source MAC and
        VLAN Stream identification function. A value of 0 indicates
        that the vlan_identifier parameter is ignored on EISS
        indication primitives.";
      reference
        "9.1.3.3 of IEEE Std 802.1CB-2017";
    }
  }
  container dmac-vlan-stream-identification {
    description
      "When instantiating an instance of the Active Destination MAC
      and VLAN Stream identification function for a particular output
      Stream, the managed objects in the following subclauses, along
      with those listed in 9.1.2, serve as the tsnStreamIdParameters
      managed object.";
    reference
      "9.1.4 of IEEE Std 802.1CB-2017";
    container identification-type {
      config false;
      description
        "The identification type indicating the method used to
        identify packets belonging to the Stream. The identification
        type contains a type number and an Organizationally Unique
        Identifier (OUI) or Company ID (CID) to identify the
        organization defining the identification method.";
      reference
        "9.1.1.6 of IEEE Std 802.1CB-2017";
      leaf type-number {
        type dot1cb-sid-types:stream-id-function;
        default "dmac-vlan";
        description
          "The Stream identification type used for the Active
          Destination MAC and VLAN Stream identification method.";
        reference
          "9.1.1.6 of IEEE Std 802.1CB-2017";
      }
```

```
      leaf oui-cid {
        type string {
          pattern "[0-9A-F]{2}(-[0-9A-F]{2}){2}";
        }
        default "00-80-C2";
        description
          "The Organizationally Unique Identifier (OUI) or Company ID
          (CID) to identify the organization defining the
          identification method. For identification methods defined
          in IEEE Std 802.1CB-2017 the OUI/CID is always 00-80-C2.";
        reference
          "9.1.1.6 of IEEE Std 802.1CB-2017";
      }
    }
    container down {
      description
        "Container for all parameters which are sent to lower layers.";
      leaf destination-mac {
        type ieee:mac-address;
        description
          "Specifies the destination_address parameter to use in the
          EISS request primitive for output packets sent to lower
          layers by the Active Destination MAC and VLAN Stream
          identification function, and the destination_address that
          identifies an input packet in an EISS indication primitive
          to the Active Destination MAC and VLAN Stream
          identification function. The ieee:mac-address type has a
          pattern that allows upper and lower case letters. To avoid
          issues with string comparison, it is suggested to only use
          upper case for the letters in the hexadecimal numbers.
          There is still an issue with a difference between the IETF
          mac-address definition and the IEEE mac-address definition,
          so consider that if implementing code that compares
          mac-addresses.";
        reference
          "9.1.4.1 of IEEE Std 802.1CB-2017";
      }
      leaf tagged {
        type vlan-tag-identification-type;
        description
          "An enumerated value indicating whether a packet in an EISS
          indication or request primitive between the Active
          Destination MAC and VLAN Stream identification function and
          the lower layers is to have a VLAN tag. This variable is
          not used in an FRER C-component. See 8.4.";
        reference
```

```
        "9.1.4.2 of IEEE Std 802.1CB-2017";
    }
    leaf vlan {
      type vlan-identifier-type;
      description
        "Specifies the vlan_identifier parameter to use in the EISS
        request primitive for output packets sent to lower layers
        by the Active Destination MAC and VLAN Stream
        identification function, and the vlan_identifier that
        identifies an input packet in an EISS indication primitive
        to the Active Destination MAC and VLAN Stream
        identification function. A value of 0 indicates that the
        vlan_identifier parameter is ignored on EISS indication
        primitives.";
      reference
        "9.1.4.3 of IEEE Std 802.1CB-2017";
    }
    leaf priority {
      type dot1qtypes:priority-type;
      description
        "Specifies the priority parameter to use in the EISS
        request primitive for output packets sent to lower layers
        by the Active Destination MAC and VLAN Stream
        identification function for all packets in a particular
        Stream.";
      reference
        "9.1.4.4 of IEEE Std 802.1CB-2017";
    }
  }
  container up {
    description
      "Container for all parameters which are offered to higher
      layers.";
    leaf destination-mac {
      type ieee:mac-address;
      description
        "Specifies the destination_address parameter to use in the
        EISS indication primitive for input packets offered to
        upper layers by the Active Destination MAC and VLAN Stream
        identification layer. This address replaces the address
        that was used to identify the packet
        (tsnCpeDmacVlanDownDestMac). The ieee:mac-address type has
        a pattern that allows upper and lower case letters. To
        avoid issues with string comparison, it is suggested to
        only use upper case for the letters in the hexadecimal
        numbers. There is still an issue with a difference between
```

```
            the IETF mac-address definition and the IEEE mac-address
            definition, so consider that if implementing code that
            compares mac-addresses.";
          reference
            "9.1.4.5 of IEEE Std 802.1CB-2017";
        }
        leaf tagged {
          type vlan-tag-identification-type;
          description
            "An enumerated value indicating whether a packet in an EISS
            indication or request primitive between the Active
            Destination MAC and VLAN Stream identification function and
            the upper layers is to have a VLAN tag. This variable is
            used only by an end system and not by a relay system.";
          reference
            "9.1.4.6 of IEEE Std 802.1CB-2017";
        }
        leaf vlan {
          type vlan-identifier-type;
          description
            "Specifies the vlan_identifier parameter to use in the EISS
            indication primitive for packets offered to upper layers,
            or the VLAN ID field for an IEEE 802.1Q tag in an ISS
            mac_service_data_unit. This address replaces the VLAN ID
            that was used to identify the packet
            (tsnCpeDmacVlanDownVlan).";
          reference
            "9.1.4.7 of IEEE Std 802.1CB-2017";
        }
        leaf priority {
          type dot1qtypes:priority-type;
          description
            "Specifies the priority parameter to use in the EISS
            indication primitive for packets offered to upper layers.";
          reference
            "9.1.4.8 of IEEE Std 802.1CB-2017";
        }
      }
    }
    container ip-stream-identification {
      description
        "When instantiating an instance of the IP Stream identification
        function, the parameters in the following subclauses replace
        the tsnStreamIdParameters managed object.";
      reference
        "9.1.5 of IEEE Std 802.1CB-2017";
```

```
container identification-type {
  config false;
  description
    "The identification type indicating the method used to
    identify packets belonging to the Stream. The identification
    type contains a type number and an Organizationally Unique
    Identifier (OUI) or Company ID (CID) to identify the
    organization defining the identification method.";
  reference
    "9.1.1.6 of IEEE Std 802.1CB-2017";
  leaf type-number {
    type dot1cb-sid-types:stream-id-function;
    default "ip";
    description
      "The Stream identification type used for the IP Stream
      identification method.";
    reference
      "9.1.1.6 of IEEE Std 802.1CB-2017";
  }
  leaf oui-cid {
    type string {
      pattern "[0-9A-F]{2}(-[0-9A-F]{2}){2}";
    }
    default "00-80-C2";
    description
      "The Organizationally Unique Identifier (OUI) or Company ID
      (CID) to identify the organization defining the
      identification method. For identification methods defined
      in IEEE Std 802.1CB-2017 the OUI/CID is always 00-80-C2.";
    reference
      "9.1.1.6 of IEEE Std 802.1CB-2017";
  }
}
leaf destination-mac {
  type ieee:mac-address;
  description
    "Specifies the destination_address parameter that identifies
    a packet in an EISS indication primitive. The
    ieee:mac-address type has a pattern that allows upper and
    lower case letters. To avoid issues with string comparison,
    it is suggested to only use upper case for the letters in the
    hexadecimal numbers. There is still an issue with a
    difference between the IETF mac-address definition and the
    IEEE mac-address definition, so consider that if implementing
    code that compares mac-addresses.";
  reference
```

```
        "9.1.5.1 of IEEE Std 802.1CB-2017";
    }
    leaf tagged {
      type vlan-tag-identification-type;
      description
        "An enumerated value indicating whether a packet in an EISS
        indication or request primitive to the IP Stream
        identification function is to have a VLAN tag.";
      reference
        "9.1.5.2 of IEEE Std 802.1CB-2017";
    }
    leaf vlan {
      type vlan-identifier-type;
      description
        "Specifies the vlan_identifier parameter that identifies a
        packet in an EISS indication primitive. A value of 0
        indicates that the frame is not to have a VLAN tag.";
      reference
        "9.1.5.3 of IEEE Std 802.1CB-2017";
    }
    leaf ip-source {
      type inet:ip-address;
      description
        "Specifies the IPv4 (RFC 791) or IPv6 (RFC 2460) source
        address parameter that must be matched to identify packets
        coming up from lower layers. An address of all 0 indicates
        that the IP source address is to be ignored on packets
        received from lower layers.";
      reference
        "9.1.5.4 of IEEE Std 802.1CB-2017";
    }
    leaf ip-destination {
      type inet:ip-address;
      description
        "Specifies the IPv4 (RFC 791) or IPv6 (RFC 2460) destination
        address parameter that must be matched to identify packets
        coming up from lower layers.";
      reference
        "9.1.5.5 of IEEE Std 802.1CB-2017";
    }
    leaf dscp {
      type inet:dscp;
      description
        "Specifies the IPv4 (RFC 791) or IPv6 (RFC 2460)
        differentiated services codepoint (DSCP, RFC 2474) that must
        be matched to identify packets coming up from the lower
```

```
        layers. A value of 64 decimal indicates that the DSCP is to
        be ignored on packets received from lower layers.";
      reference
        "9.1.5.6 of IEEE Std 802.1CB-2017";
    }
    leaf next-protocol {
      type enumeration {
        enum none {
          description
            "No protocol is specified";
        }
        enum udp {
          description
            "UDP is specified as the next protocol.";
          reference
            "RFC 768";
        }
        enum tcp {
          description
            "TCP is specified as the next protocol.";
          reference
            "RFC 793";
        }
        enum sctp {
          description
            "SCTP is specified as the next protocol.";
          reference
            "RFC 4960";
        }
      }
      description
        "Specifies the IP next protocol parameter that must be
        matched to identify packets coming up from lower layers. The
        value of this parameter must specify either none, UDP (RFC
        768), TCP (RFC 793), or SCTP (RFC 4960). If "none," then the
        tsnCpeIpIdSourcePort and tsnCpeIpIdDestinationPort managed
        objects are not used.";
      reference
        "9.1.5.7 of IEEE Std 802.1CB-2017";
    }
    leaf source-port {
      type inet:port-number;
      description
        "Specifies the TCP or UDP Source Port parameter that must be
        matched to identify packets coming up from lower layers. A
        value of 0 indicates that the Source Port number of the
```

```
        packet is to be ignored on packets received from lower
        layers.";
      reference
        "9.1.5.8 of IEEE Std 802.1CB-2017";
    }
    leaf destination-port {
      type inet:port-number;
      description
        "Specifies the TCP or UDP Destination Port parameter that
        must be matched to identify packets coming up from lower
        layers. A value of 0 indicates that the Destination Port
        number of the packet is to be ignored on packets received
        from lower layers.";
      reference
        "9.1.5.9 of IEEE Std 802.1CB-2017";
    }
  }
  container organization-specific {
    description
      "This container allows to select Stream identification methods
      that are defined by entities outside of IEEE 802.1.";
    reference
      "9.1.1.6 of IEEE Std 802.1CB-2017";
    container identification-type {
      description
        "The identification type indicating the method used to
        identify packets belonging to the Stream. The identification
        type contains a type number and an Organizationally Unique
        Identifier (OUI) or Company ID (CID) to identify the
        organization defining the identification method.";
      reference
        "9.1.1.6 of IEEE Std 802.1CB-2017";
      leaf type-number {
        type int32 {
          range "256..max";
        }
        description
          "The type number used for an identification method defined
          by an entity owning the OUI or CID for this identification
          type.";
        reference
          "9.1.1.6 of IEEE Std 802.1CB-2017";
      }
      leaf oui-cid {
        type string {
          pattern "[0-9A-F]{2}(-[0-9A-F]{2}){2}";
```

```
          }
          description
            "The Organizationally Unique Identifier (OUI) or Company ID
            (CID) to identify the organization defining the
            identification method.";
          reference
            "9.1.1.6 of IEEE Std 802.1CB-2017";
        }
      }
    }
  }
}
augment "/if:interfaces/if:interface/if:statistics" {
  description
    "The following counters are the counters for Stream identification.
    All counters are unsigned integers. If used on links faster than
    650 000 000 bits per second, they shall be 64 bits in length to
    ensure against excessively short wrap times.";
  reference
    "9.2 of IEEE Std 802.1CB-2017
    9.3 of IEEE Std 802.1CB-2017";
  container stream-id {
    description
      "This container contains the per-port as well as the
      per-port-per-stream counters for Stream identification.";
    reference
      "9.2 of IEEE Std 802.1CB-2017
      9.3 of IEEE Std 802.1CB-2017";
    container per-port-counters {
      config false;
      description
        "Contains the per-port counters for Stream identification. The
        following counters are instantiated for each port on which the
        Stream identification function is configured. The counters are
        indexed by port number.";
      reference
        "9.3 of IEEE Std 802.1CB-2017";
      leaf input-pkts {
        type uint64;
        config false;
        description
          "The tsnCpSidInputPackets counter is incremented once for
          each packet identified by any Stream identification function
          on this port. Its value equals the sum (modulo the size of
          the counters) of all of the tsnCpsSidInputPackets counters on
          this same port.";
```

```
      reference
        "9.3.1 of IEEE Std 802.1CB-2017";
    }
    leaf output-pkts {
      type uint64;
      config false;
      description
        "The tsnCpSidOutputPackets counter is incremented once for
        each packet passed down the stack by any Stream
        identification function on this port. Its value equals the
        sum (modulo the size of the counters) of all of the
        tsnCpsSidOutputPackets counters on this same port.";
      reference
        "9.3.2 of IEEE Std 802.1CB-2017";
    }
  }
  list per-port-per-stream-counters {
    key "direction-out-facing handle";
    config false;
    description
      "Contains the per-port-per-stream counters for Stream
      identification. The following counters are instantiated for
      each port on which the Stream identification function is
      configured. The counters are indexed by port number, facing
      (in-facing or out-facing), and stream_handle value
      (tsnStreamIdHandle).";
    reference
      "9.2 of IEEE Std 802.1CB-2017";
    leaf direction-out-facing {
      type dot1cb-sid-types:direction;
      description
        "An object indicating whether the counters apply to
        out-facing (True) or in-facing (False).";
    }
    leaf handle {
      type leafref {
        path '/stream-identity/handle';
      }
      description
        "The according tsnStreamIdHandle for these counters.";
    }
    leaf input-pkts {
      type uint64;
      description
        "The tsnCpsSidInputPackets counter is incremented once for
        each packet identified by the Stream identification function.";
```

```
        reference
          "9.2.1 of IEEE Std 802.1CB-2017";
      }
      leaf output-pkts {
        type uint64;
        description
          "The tsnCpsSidOutputPackets counter is incremented once for
          each packet passed down the stack by the Stream
          identification function.";
        reference
          "9.2.2 of IEEE Std 802.1CB-2017";
      }
    }
  }
}
```

12.6.2.3 Definition for the ieee802-dot1cb-frer-types YANG module

```
module ieee802-dot1cb-frer-types {
  yang-version "1.1";
  namespace urn:ieee:std:802.1Q:yang:ieee802-dot1cb-frer-types;
  prefix dot1cb-frer-types;
  organization
    "Institute of Electrical and Electronics Engineers";
  contact
    "WG-URL: http://ieee802.org/1/
    WG-EMail: stds-802-1-l@ieee.org

    Contact: IEEE 802.1 Working Group Chair
    Postal: C/O IEEE 802.1 Working Group
            IEEE Standards Association
            445 Hoes Lane
            Piscataway, NJ 08854
            USA

    E-mail: stds-802-1-chairs@ieee.org";
  description
    "Management objects that control the frame replication and
    elimination from IEEE Std 802.1CB-2017. This YANG data model conforms
    to the Network Management Datastore Architecture defined in RFC 8342.
    Copyright (C) IEEE (2021). This version of this YANG module is part
    of IEEE Std 802.1CBcv; see the standard itself for full legal
    notices.";
  revision 2021-12-08 {
```

```
    description
      "Published as part of IEEE Std 802.1CBcv-2021. Initial version.";
    reference
      "IEEE Std 802.1CBcv-2021, Frame Replication and Elimination for
      Reliability - FRER YANG Data Model and Management Information Base
      Module.";
  }
  typedef seq-rcvy-algorithm {
    type enumeration {
      enum vector {
        value 0;
        description
          "The sequence recovery type used for the Vector Recovery
          Algorithm.";
      }
      enum match {
        value 1;
        description
          "The sequence recovery type used for the Match Recovery
          Algorithm.";
      }
    }
    description
      "An enumerated value specifying which sequence recovery algorithm
      is to be used for an instance of the Sequence recovery function.";
    reference
      "10.4.1.5 of IEEE Std 802.1CB-2017";
  }
  typedef seq-encaps-method {
    type enumeration {
      enum reserved {
        value 0;
        description
          "Reserved value.";
      }
      enum r-tag {
        value 1;
        description
          "The sequence encode decode type used for the R_TAG
          encode/decode method.";
      }
      enum hsr-seq-tag {
        value 2;
        description
          "The sequence encode decode type used for the HSR encode/decode
          method.";
```