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IEEE Standard for

Local and metropolitan area networks—

Media Access Control (MAC) Bridges and Virtual Bridged Local Area Networks—

Amendment 15: Multiple I-SID Registration Protocol

IEEE Computer Society

Sponsored by the
LAN/MAN Standards Committee

IEEE
3 Park Avenue
New York, NY 10016-5997
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IEEE Std 802.1Qbe™-2011
(Amendment to
IEEE Std 802.1Q™-2011)

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Approved 16 June 2011

IEEE-SA Standards Board

Abstract: This amendment to IEEE Std 802.1Q-2011 specifies protocols, procedures, and managed objects to support topology change signaling to alter the binding (held in an I-Component) of Customer addresses to Backbone addresses on a per-I-SID basis. This is accomplished by extending the use of the Multiple Registration Protocol (MRP).
Keywords: Bridged Local Area Networks, LANs, local area networks, MAC Bridges, metropolitan area networks, MIRP, MMRP, MRP, MVRP, Provider Backbone Bridges, Virtual Bridged Local Area Networks, virtual LANs

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Introduction

This introduction is not part of IEEE Std 802.1Qbe-2011, IEEE Standard for Local and metropolitan area networks—Media Access Control (MAC) Bridges and Virtual Bridged Local Area Networks—Amendment 15: Multiple I-SID Registration Protocol.

This amendment to IEEE Std 802.1Q-2011 provides Backbone Service Identifier registration capabilities useful to Media Access Control (MAC) Bridges and Virtual Bridged Local Area Networks to support a new Multiple Registration Protocol application, the Multiple I-SID Registration Protocol (MIRP). To this end, it

a) Separates "Registration Fixed" Dynamic VLAN Registration Entries into those that accept MRP New messages from a Port and propagate them, and those that do not.
b) Defines the operation of the MIRP application (only) for I-components and in Customer Backbone Ports.
c) Specifies PDU formats for MIRP.
d) Defines the relationship between MIRP and another MRP application, the Multiple VLAN Registration Protocol (MVRP).
e) Augments the existing Provider Backbone Bridge managed objects with objects to control the operation of MIRP.
f) Specifies Registration Fixed (New propagated) operation for MVRP.
g) Specifies the use of Attribute value 0 for MVRP.
h) Augments the existing MVRP managed objects to control the added MVRP capabilities.

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 may be obtained from

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Amendment 15: Multiple I-SID Registration Protocol

This amendment to IEEE Std 802.1Q-2011 adds a new Multiple Registration Protocol application, the Multiple I-SID Registration Protocol (MIRP). Changes are applied to the base text of IEEE Std 802.1Q-2011.

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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. Text shown in bold italics in this amendment defines the editing instructions necessary to changes to this base text. Three editing instructions are used: ***change***, ***delete***, and ***insert***. ***Change*** is used to make a change to existing material. The editing instruction specifies the location of the change and describes what is being changed. Changes to existing text may be clarified using ~~strikeout~~ markings to indicate removal of old material, and underscore markings to indicate addition of new material). ***Delete*** removes existing material. ***Insert*** adds new material without changing the existing material. Insertions may require renumbering. If so, renumbering instructions are given in the editing instruction. Editorial notes will not be carried over into future editions of IEEE Std. 802.1Q.[1]

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

1. Overview

Insert the following paragraph at the end of Clause 1:

This standard specifies protocols, procedures, and managed objects to support topology change signaling to alter the binding (held in an I-Component) of Customer addresses to Backbone addresses on a per-I-SID basis. This is accomplished by extending the use of the Multiple Registration Protocol (MRP).

1.3 Introduction

Insert the following text at the end of 1.3:

This standard also specifies protocols, procedures, and managed objects to support topology change signaling to alter the binding (held in an I-Component) of Customer addresses to Backbone addresses on a per-I-SID basis. This is accomplished by extending the use of the Multiple Registration Protocol (MRP). To this end, it specifies the Multiple I-SID Registration Protocol (MIRP) application of MRP, and the frame formats that it uses.

NOTE—MIRP can only trigger the flushing of learned MAC address information; it does not propagate the registration of I-SIDs. The name Multiple I-SID Registration Protocol is chosen because MIRP is a Multiple Registration Protocol (MRP) application, and can be extended in future to perform I-SID registrations.

4. Abbreviations

Insert the following abbreviations into Clause 4 in alphabetical order:

MIRP Multiple I-SID Registration Protocol

MIRPDU Multiple I-SID Registration Protocol Data Unit

5. Conformance

5.4 VLAN-aware Bridge component requirements

5.4.1 VLAN-aware Bridge component options

Insert the following list items at the end of 5.4.1:

t) Support the operation of MVRP (5.4.2, 11.2) as a New-only Participant;
u) Support the MVRP Extension Management Information Base (MIB) module defined in 17.7.15.

5.7 I-component conformance

5.7.1 I-component options

Insert the following list items at the end of 5.7.1:

e) Support the Multiple I-SID Registration Protocol defined in 39.1.1;
f) Support the MVRP Extension Management Information Base (MIB) module defined in 17.7.15.
g) Support the MIRP MIB module defined in 17.7.16.

5.8 B-component conformance

5.8.1 B-component options

Insert the following list items at the end of 5.8.1:

e) Support the Multiple I-SID Registration Protocol defined in 39.1.2;
f) Support the MVRP Extension Management Information Base (MIB) module defined in 17.7.15.
g) Support the MIRP MIB module defined in 17.7.16.

5.16 End station requirements for MMRP, MVRP, and MSRP

5.16.2 MVRP requirements and options

Insert the following list items at the end of 5.16.2:

d) Support the operation of MVRP (5.4.2, 11.2) as a New-only Participant;
e) Support the MVRP Extension Management Information Base (MIB) module defined in 17.7.15.

6. Support of the MAC Service

6.16 Filtering services in Bridged Local Area Networks

6.16.5 Categories of service

Change item a) in 6.16.5 as follows:

a) *Basic Filtering Services.* These services are supported by the Forwarding Process (8.6) and by Static Filtering Entries (8.8.1), Static VLAN Registration Entries (8.8.2), Dynamic Filtering Entries (8.8.3), and Dynamic VLAN Registration Entries (8.8.5) in the Filtering Database. The information contained in the Dynamic Filtering Entries is maintained through the operation of the Learning Process (8.7), while the information contained in the Dynamic VLAN Registration Entries is maintained through the operation of MVRP (11.2) and MIRP (Clause 39).

7. Principles of network operation

7.1 Network overview

Change Figure 7-1 as shown:

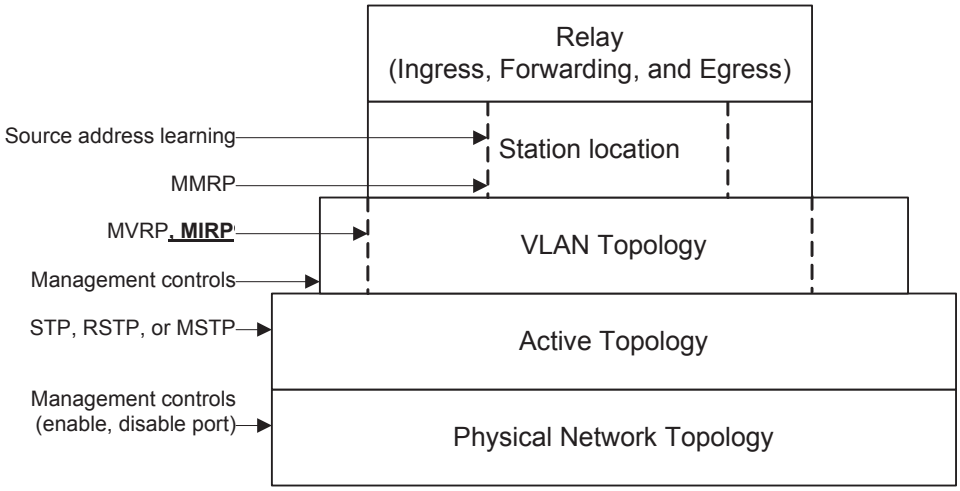

Figure 7-1—VLAN Bridging overview

8. Principles of bridge operation

8.1 Bridge operation

8.1.5 Traffic reduction

Change item c) and item d) in 8.1.5 as follows:

c) Automatic inclusion and removal of Bridge Ports in the VLAN, through configuration of Dynamic VLAN Registration Entries by means of MVRP (8.8.5 and 11.2) or MIRP (Clause 39);
d) Explicit configuration of management controls associated with the operation of MVRP and MIRP by means of Static VLAN Registration Entries (8.8.2 and 11.2);

8.8 The Filtering Database

Change item j) in 8.8 as follows:

j) Dynamic VLAN Registration Entries are used to specify the Ports on which VLAN membership has been dynamically registered. They are created, updated, and removed by MVRP and MIRP, in support of automatic VLAN membership configuration (Clause 11 and Clause 39), subject to the state of the Restricted_VLAN_Registration management control (11.2.3.2.3). If the value of this control is TRUE, then the creation of a Dynamic VLAN Registration Entry is not permitted unless a Static VLAN Registration Entry exists that permits dynamic registration for the VID concerned.

8.8.2 Static VLAN Registration Entries

Change item b) 1) in 8.8.2 as follows:

b) A Port Map, consisting of a control element for each outbound Port, specifying
    1) The Registrar Administrative Control values for MVRP (Clause 11) and MIRP (Clause 39) for the VID. In addition to providing control over the operation of MVRP and MIRP, these values can also directly affect the forwarding behavior of the Bridge, as described in 8.8.10. The values that can be represented are
        i) Registration Fixed (New ignored); or
        ii) Registration Fixed (New propagated); or
        iii) Registration Forbidden; or
        iv) Normal Registration.

10. Multiple Registration Protocol (MRP) and Multiple MAC Registration Protocol (MMRP)

Insert the following paragraph at the end of the introductory text of Clause 10:

Clause 39 defines a fourth MRP application, the Multiple I-SID Registration Protocol (MIRP), that serves as an alternative to MVRP for per-VLAN flushing of learned MAC address information in I-components.

10.5 Requirements for interoperability between MRP Participants

Change Table 10-1 and Table 10-2 as follows

Table 10-1—MRP application addresses

Assignment[a]	Value
Customer and Provider Bridge MMRP address	01-80-C2-00-00-20
Customer Bridge MVRP address	01-80-C2-00-00-21
Reserved	01-80-C2-00-00-22
Reserved	01-80-C2-00-00-23
Reserved	01-80-C2-00-00-24
Reserved	01-80-C2-00-00-25
Reserved	01-80-C2-00-00-26
Reserved	01-80-C2-00-00-27
Reserved	01-80-C2-00-00-28
Reserved	01-80-C2-00-00-29
Reserved	01-80-C2-00-00-2A
Reserved	01-80-C2-00-00-2B
Reserved	01-80-C2-00-00-2C
Reserved	01-80-C2-00-00-2D
Reserved	01-80-C2-00-00-2E
Reserved	01-80-C2-00-00-2F

a MIRP is an MRP application, but is not assigned an address from this table (39.2.1.5, 39.2.1.6).

Table 10-2—MRP EtherType values

Assignment	Value
MMRP EtherType	88-F6
MVRP EtherType	88-F5
MSRP EtherType	22-EA
MIRP EtherType	xx-xx

10.6 Protocol operation

Change the paragraph after NOTE 5 in 10.6 as follows:

In certain contexts, often encountered in Provider Bridged Networks or Provider Backbone Bridged Networks, it is necessary to control the VLAN entries in the Filtering Database using Static VLAN Registration Entries, and retain only the ability to signal the need to flush learned MAC Address Entries via MRP. A New-only Participant supports this need by implementing only a part of the Applicant and Registrar state machines, but not implementing the LeaveAll state machine, and by transmitting and receiving only New messages. It is also possible to simplify an MRP Participant that only wishes to make declarations; for example, for an end station that uses MMRP (10.9) to declare a need to receive group addressed frames, but is not a source of such frames, and therefore does not need to support source pruning by registering declarations from other Participants. Such an Applicant-Only Participant does not implement the Registrar or LeaveAll state machines, never sends LeaveAll, Empty, or JoinEmpty messages (which would elicit unnecessary Joins from its peer Participants), and does not implement the administrative controls defined in 10.7.2 and 10.7.3. The following ~~four~~five types of MRP implementation conform to this standard:

— Full Participant
— Full Participant, point-to-point subset
— New-only Participant
— Applicant-Only Participant
— Applicant-Only point-to-point subset, also referred to as the Simple-Applicant Participant

10.7 Protocol specification

Insert the following paragraph after the fourth paragraph ("The point-to-point subset of the Full Participant…") in 10.7:

A New-only Participant implements the Applicant state machine, with the omission of certain states and actions, as specified in Table 10-3, and the Registrar state machine (Table 10-4), for each Attribute declared, registered, or tracked, but does not implement the LeaveAll state machine (Table 10-5) or the PeriodicTransmission state machine (Table 10-6). Applications that permit both Full Participants and New-Only Participants define managed objects (12.9) to make the selection on a per-Port basis.

10.7.2 Registrar Administrative Controls

Change 10.7.2 as follows:

Associated with each instance of the Registrar state machines are *Registrar Administrative Control* parameters. These parameters allow administrative control to be exercised over the registration state of each Attribute value, and hence, via the propagation mechanism provided by MAP, allow control to be exercised over the propagation of declarations.

a) *Normal Registration.* The Registrar responds to incoming MRP messages as specified by Table 10-4.
b) *Registration Fixed (New ignored).* The Registrar ignores all MRP messages, and remains IN (registered).
c) *Registration Fixed (New propagated).* The Registrar ignores all MRP messages except New, and remains IN (registered).
d) *Registration Forbidden.* The Registrar ignores all MRP messages, and remains MT (unregistered).

The default value of this parameter is *Normal Registration*.

If the value of this parameter is *Registration Fixed (New ignored), Registration Fixed (New propagated)* or *Registration Forbidden,* In and JoinIn messages are sent rather than Empty or JoinEmpty messages. If the value of this parameter is *Registration Fixed (New propagated),* only New messages are accepted.

NOTE—The Registrar Administrative Controls are realized by means of the contents of the Port Map parameters of static entries in the Filtering Database for all MRP applications In the case of MMRP, the static entries concerned are Static Filtering Entries (8.8.1); in the case of MVRP and MIRP, the static entries concerned are Static VLAN Registration Entries (8.8.2). The contents of the Port Map parameters in static entries can be modified by means of the management operations defined in Clause 12. In the absence of such control information for a given attribute, the default value "Normal Registration" is assumed.

10.7.3 Applicant Administrative Controls

Insert the following list item after item a) in 10.7.3, and reletter the remaining list item in 10.7.3 accordingly:

b) *New-only Participant*. The state machine sends only New MRP messages.

10.7.5 Protocol event definitions

10.7.5.13 Message reception events

Change item a) of 10.7.5.13 as follows:

a) The PDU was addressed to an MRP application (the MRP application address, ~~(~~Table 10-1,~~)~~ or MIRP address, 39.2.1.6) and had an Ethertype (Table 10-2) in accordance with that of the MRP application associated with the state machine.

10.7.6 Protocol Action definitions

10.7.6.12 New

Change 10.7.6.12 as follows:

This action causes a MAD_Join.indication primitive to be issued to the MAD Service User, indicating the Attribute instance corresponding to the state machine concerned, with the *new* parameter set TRUE.

10.7.6.13 Join

Change 10.7.6.13 as follows:

This action causes a MAD_Join.indication primitive to be issued to the MAD Service User, indicating the Attribute instance corresponding to the state machine concerned, with the *new* parameter set FALSE.

10.7.7 Applicant state machine

Insert the following footnote in Table 10-3 on the four column headings shown and the three row headings shown:

Table 10-3—Applicant state table

		STATE			
		VO[11,12]	**VN[6,12]**	**AN[6,12]**	**QA[12]**
EVENT	**Begin![12]**				
	New![12]				
	tx![7,12]				

[12]A New-only Participant recognizes only the Begin!, New!, and tx! events, and ignores all others, so can only reach the VO, VN, AN, and QA states.

10.12 Definition of the MMRP application

10.12.2 Provision and support of Extended Filtering Services

10.12.2.3 Administrative controls

Change the second paragraph of 10.12.2.3 as follows:

The initial state of the Permanent Database (i.e., the state of the Permanent Database in a Bridge that has not been otherwise configured by management action) includes a Static Filtering Entry with a MAC Address specification of All Groups, in which the Port Map indicates Registration Fixed (New ignored). This Static Filtering Entry will have the effect of determining the default Group filtering behavior of all Ports of the Bridge to be Forward All Groups. This Permanent Database entry may be deleted or updated by management action.

10.12.4 Attribute value support requirements

Insert the following subclause, 10.12.5, after 10.12.4:

10.12.5 Registrar Administrative Controls

MMRP supports the Registration Fixed (New ignored) value, but not the Registration Fixed (New propagated) value, of the Registrar Administrative Controls (10.7.2).

11. VLAN topology management

11.1 Static and dynamic VLAN configuration

Insert the following list item after item a) in 11.1, and reletter the remaining list items in 11.1 accordingly:

b) *Static configuration with topology changes.* The management facilities described in Clause 12 are used to establish precisely which VLANs have this Port in their Member set, and the MVRP or MIRP management controls are used to permit the signaling, via MVRP or MIRP, of network topology changes that require flushing learned address information from the Filtering Database. MVRPDUs and MIRPDUs received from devices reachable via that Port are ignored for the purposes of creating or deleting Dynamic VLAN Registration Entries in the Filtering Database on that Port, and the Member set for all VLANs can therefore only be determined by means of static entries in the Filtering Database.

Insert the following list item after item e) [formerly d)] in 11.1, and reletter the remaining list items in 11.1 accordingly:

f) Use of static configuration with topology changes can be appropriate where the configuration of VLANs and ports is static in some part of the network, but dynamic in another part, so that changes in the topology of the dynamic part can necessitate the flushing of learned MAC address information in bridges in the static part. For example, in a Provider Backbone Bridged Network, a topology change in a customer network with dual attachments to the provider can require a provider's I-component to signal a MAC address flush across the backbone, even though the VLANs on the Virtual Instance Ports involved are statically configured.

11.2 Multiple VLAN Registration Protocol

11.2.1 MVRP overview

11.2.1.3 Use of the PVID and VID Set

Change the first paragraph of 11.2.1.3 as follows:

The initial state of the Permanent Database contains a Static VLAN Registration Entry for the Default PVID, in which the Port Map indicates Registration Fixed (New ignored) on all Ports. This ensures that in the default state, where the value of every PVID of each Port is the Default PVID and where the VID Set of each Port is empty, membership of the Default PVID is propagated across the Bridged Local Area Network to all other MVRP-aware devices. Subsequent management action may change both the Permanent Database and the Filtering Database in order to modify or remove this initial setting, and may change the PVID and/or VID Set value(s) on any Port of the Bridge.

11.2.3 Definition of the MVRP application

11.2.3.1 Definition of MRP elements

11.2.3.1.7 MVRP FirstValue definitions

Change 11.2.3.1.7 as follows:

The FirstValue field in instances of the VID Vector Attribute Type shall be encoded in MRPDUs (10.4) as two octets, taken to represent an unsigned binary number, and equal to the value of the VLAN ID that is to be encoded.

The range of permitted ~~VID~~ values that can be encoded in the FirstValue fields in MVRP is restricted to the range ~~1~~0 through 4094. The value 0 represents the VLAN ID of the untagged frame on which the MRPDU is transmitted or received, and 1 through 4094 identify specific VLAN IDs. If enabled by management [item (e) in 12.9.2.2.2], and if there is only one VLAN ID whose untagged set includes the Port of an MVRP Participant, the Participant shall transmit the value 0 in place of that VLAN ID. All MVRP Participants shall translate the value 0 in a received message to the PVID of the receiving Port.

NOTE—Previous revisions of this Standard did not provide for transmission or reception of 0 as an MVRP Attribute value. No automatic means for determining whether the other MVRP Participants on a LAN are capable of receiving the value 0 are provided. Therefore, extreme care is in order when configuring an MVRP Participant to transmit Attribute value 0, as compliant implementations of previous revisions of this standard could drop such MRPDUs as badly formed.

11.2.3.2 Provision and support of the VLAN registration service

11.2.3.2.3 Administrative controls

Change the second paragraph of 11.2.3.2.3 as follows:

The provision of static control over the ability of Applicant and Registrar state machines to participate in protocol exchanges is achieved by means of the Applicant Administrative Control parameters and Registrar Administrative Control parameters associated with the operation of MRP (10.7.2, 10.7.3). Where management capability is implemented, the Applicant and Registrar Administrative Control parameters can be applied and modified by means of the management functionality defined in 12.9. A separate managed variable [item (c) in 12.9.2.1.3] controls whether the Applicant state machine transmits 0 or the VID as the Attribute for a VLAN on a Port in that VLAN's untagged set.

11.2.4 VID translation table

Change 11.2.4 as follows:

If a VID Translation Table (6.7) is in use for a Bridge Port, the VID values received in MVRP Attributes are translated on reception of MVRPDUs prior to MVRP processing as specified in this subclause (11.2), and translated after processing for encoding MVRP Attributes in transmitted MVRPDUs. The interpretation of the MVRP Attribute value 0 is not affected by the VID Translation Table in either direction.

NOTE—In the case that the Port on which an MVRPDU is transmitted is in the untagged set of the VLAN ID matching the PVID of the Port receiving the MVRPDU, the use of the value 0 in the FirstValue field effectively performs a VID translation.

11.2.5 Use of “new” declaration capability

Insert the following subclause, 11.2.6, after 11.2.5, and renumber the remaining subclause in Clause 11 accordingly:

11.2.6 New-only Participant and Registrar Administrative Controls

A bridge may support an MVRP New-only Participant (10.6). This can be useful in an I-component that has statically configured S-VLAN registrations, but must still accommodate signalling the flushing of learned MAC address information. The choice of whether a given Port’s MVRP Participant operates as a Full Participant or a New-only Participant is controlled by a managed object [12.9.2.2]. This managed object is separate from the one controlling whether a given Port uses Registration Fixed (New ignored) or Registration Fixed (New propagated) Static VLAN Registration Entries [item (d) in 12.7.7.3.3].

NOTE 1—Configuring an MVRP Participant as a New-only Participant makes the assumption that all of the MVRP Participants on the LAN are configured completely via Static VLAN Registration Entries, and that no Dynamic VLAN Registration Entries are needed. If this assumption is violated, then the Bridged Network can fail to provide connectivity for the VLANs that need Dynamic VLAN Registration Entries. Therefore, extreme care is in order when configuring a New-only MVRP Participant.

If a MAD_Join.indication is received by the MVRP MAD with the *new* parameter set, e.g., because a “new” MVRP declaration is received on a Port configured for New propagated [item (d) in 12.7.7.3.3] as a result of receiving an MVRPDU from the attached LAN, and that MAD_Join.indication does not correspond to a Static VLAN Registration Entry of Registration Fixed (New propagated) in the Filtering database, that MAD_Join.indication shall be discarded without being propagated.

NOTE 2—If only one S-VLAN is configured per VIP, then using a MIRP Participant (Clause 39) can provide bandwidth and processing savings over using an MVRP New-only Participant on a VIP. See 39.2.1.1 and 39.2.1.6.

12. Bridge management

12.1 Management functions

12.1.1 Configuration management

Insert the following list item at the end of 12.1.1:

j) The ability to control the operation of MIRP.

12.9 MRP Entities

12.9.2 The MRP Attribute Type object

12.9.2.1 Read MRP Applicant Controls

12.9.2.1.1 Purpose

Change 12.9.2.1.1 as follows:

To read the current values of the MRP Applicant Administrative control parameters (~~10.8.2.2~~10.7.3) and Transmit Zero parameters (11.2.3.1.7) associated with all MRP Participants for a given Port, MRP Application, and Attribute Type.

12.9.2.1.2 Inputs

Change item b) in 12.9.2.1.2 as follows:

b) The MRP Application ~~address (Table 10-1)~~;

12.9.2.1.3 Outputs

Insert the following list item at the end of 12.9.2.1.3:

c) Transmit zero enable—whether the transmission of 0 as an Attribute value is currently enabled (MVRP only). (11.2.3.1.7).

12.9.2.2 Set MRP Applicant Controls

12.9.2.2.1 Purpose

Change 12.9.2.2.1 as follows:

To set new values for the MRP Applicant Administrative control parameters (10.7.3) and Transmit Zero parameters (11.2.3.1.7) associated with all MRP Participants for a given Port, MRP Application, and Attribute Type.

12.9.2.2.2 Inputs

Change item b) in 12.9.2.2.2 as follows:

b) The MRP Application ~~address (Table 12-1 of IEEE Std 802.1D)~~;

Insert the following list item at the end of 12.9.2.2.2:

e) The desired Transmit zero enable value (MVRP only) (11.2.3.1.7).

Insert the following subclause, 12.9.2.2.4, after 12.9.2.2.3:

12.9.2.2.4 Procedures

A Bridge shall not allow both MIRP and MVRP to be enabled on the same Virtual Instance Port.

12.16 Backbone Edge Bridge management

12.16.1 BEB configuration managed object

Insert the following paragraph at the end of 12.16.1:

Items marked "(MIRP only)" shall be supported if the B-component supports the Multiple I-SID Registration Protocol (Clause 39).

12.16.1.1 Read BEB configuration

12.16.1.1.1 Purpose

Change 12.16.1.1.1 as follows:

All BEBs shall implement the read BEB configuration function to obtain information regarding the type of components and ports within a BEB. Items marked "(MIRP only)" shall be supported if the B-component supports the Multiple I-SID Registration Protocol (Clause 39).

12.16.1.1.3 Outputs

Insert the following list items at the end of 12.16.1.1.3:

i) (MIRP only) A Boolean value specifying whether MIRP is (TRUE) or is not (FALSE) enabled in this B-component (Clause 39).
j) (MIRP only) The MIRP B-VID to which MIRPDUs transmitted from a Provider Network Port (PNP) are to be assigned if item (k) contains the value cbpMirpGroup (1). The value 0 (the default value) indicates that the CBP PVID is to be used (39.2.1.6).
k) (MIRP only) An enumerated value specifying what destination_address and vlan_identifier are to be used when the MIRP Participant transmits an MIRPDU from a PNP, either:
    1) **cbpMirpGroup:** Use the Nearest Customer Bridge group address from Table 8-1 with the MIRP B-VID (this is the default value) [item (a) in 39.2.1.6];
    2) **cbpMirpVlan:** Use the Nearest Customer Bridge group address from Table 8-1 with the Backbone VLAN Identifier field from the Backbone Service Instance table [item (b) in 39.2.1.6]; or
    3) **cbpMirpTable:** Use the Default Backbone Destination and Backbone VLAN Identifier fields from the Backbone Service Instance table [item (c) in 39.2.1.6].
l) (MIRP only) A Boolean value specifying the administrative status requested by management for attaching a MIRP Participant to a PNP or management Port. If TRUE, the BEB is to attach a MIRP Participant to exactly one PNP or management Port, and if FALSE, no MIRP Participant is to be present on any PNP or management Port. Default value is TRUE (39.1.2).
m) (MIRP only) The read-only Bridge Port Number (or 0, if none) of the PNP to which the MIRP Participant is attached (39.1.2).

12.16.1.2 Set BEB configuration

12.16.1.2.1 Purpose

Change 12.16.1.2.1 as follows:

All BEBs shall implement the set BEB configuration function to set the BEB Name. Items marked "(MIRP only)" shall be supported if the B-component supports the Multiple I-SID Registration Protocol (Clause 39). ~~The BEB Name is~~ All items are persistent over power up or reboot.

12.16.1.2.2 Inputs

Insert the following list items at the end of 12.16.1.2.2:

b) (MIRP only) A Boolean value specifying whether MIRP is (TRUE) or is not (FALSE) enabled in this B-component (Clause 39).
c) (MIRP only) The MIRP B-VID to which received MIRPDUs are to be assigned if item (d) contains the value cbpMirpGroup (1). The value 0 (the default) indicates that the CBP PVID is to be used (39.2.1.6).
d) (MIRP only) An enumerated value specifying what destination_address and vlan_identifier are to be used when the MIRP Participant transmits an MIRPDU towards the MAC relay entity, either cbpMirpGroup (1), cbpMirpVlan (2), or cbpMirpTable (3) (39.2.1.6).
e) (MIRP only) A Boolean value specifying the administrative status requested by management for attaching a MIRP Participant to a PNP or management Port. If TRUE, the BEB is to attach a MIRP Participant to exactly one PNP or management Port, and if FALSE, no MIRP Participant is to be present on any PNP or management Port (39.1.2).

13. The Multiple Spanning Tree Protocol (MSTP)

13.25 Per port variables

13.25.13 fdbFlush

Change the note in 13.25.13 as follows:

NOTE—If MVRP or MIRP is in use, the topology change notification and flushing mechanisms defined in MRP (Clause 10) and MVRP (11.2.5) are responsible for filtering entries in the Filtering Database for VLANs that are dynamically registered using MVRP or MIRP (~~i.e.~~ e.g., for which there is no fixed registration in the Bridge on non-Edge Ports).

16. Principles of Provider Bridged Network operation

16.3 Service instance connectivity

Change Note 1 in 16.3 as follows:

NOTE 1—Autoconfiguration of the extent of each S-VLAN is accomplished by the service provider configuring the MVRP Administrative Control "Registration Fixed (New ignored)" for the S-VLAN on each Customer Network Port where the corresponding MAC Service Instance can be selected. The Enable Ingress Filtering parameter is not typically used within an individual provider network, as it limits the ability of the network to carry service instances following changes in the active topology. However, it can be used to limit the reachability of service instances used by the service provider for network management and to restrict service instances carried from one provider network domain to another

Change the last paragraph of 16.3 as follows:

The operation of MVRP within a provider network is independent of the operation of any configuration protocol within attached customer networks. The Provider Bridge MVRP Address (Table 8-1) is used as the destination address of all MVRPDUs transmitted in support of the MVRP Application. Frames received by Customer Network Ports and addressed to the MRP Application Address (Table 10-1) not in use by the S-VLAN component are subject to service instance selection and relay in the same way as customer data frames. The MVRP Administrative Control for each S-VLAN is either "Registration Fixed (New ignored)" or "Registration Forbidden" on all Customer Network Ports, so no information is received from any Provider Bridge MVRPDU that has been erroneously transmitted by a customer system.

17. Management Information Base (MIB)

17.2 Structure of the MIB

Insert the following rows at the end of Table 17-1:

Table 17-1—Structure of the MIB Modules

Module	subclause	Defining standard	Reference	Notes
IEEE8021-MVRPX-MIB	17.7.15	802.1Qbe	11.2	Initial version in 802.1Qbe
IEEE8021-MIRP-MIB	17.7.16	802.1Qbe	39	Initial version in 802.1Qbe

17.2.14 Structure of the IEEE8021-SRP MIB

Insert the following subclauses, 17.2.15 and 17.2.16 (including Table 17-21 and Table 17-22), after 17.2.14, and renumber the subsequent tables in Clause 17 accordingly:

17.2.15 Structure of the MVRP extension MIB

The IEEE8021-MVRPX-MIB augments the Bridge Port VLAN table to add three variables to control whether the MVRP Participant on each Port operates as a Full Participant or a New-only Participant (10.6), how New messages are treated, and whether to transmit the 0 VLAN ID. Table 17-21 describes the relationship between the SMIv2 objects defined in the MIB module in 17.7.15 and the variables and managed objects defined in Clause 12.

Table 17-21—IEEE8021-MVRPX-MIB structure and relationship to this standard

Clause 17 MIB table/object	Reference
ieee8021MvrpxPortTable	12.9.2
(AUGMENTS ieee8021BridgeBasePortEntry)	—
ieee8021MvrpxPortNewOnly	12.9.2.1.3, 12.9.2.2.2
ieee8021MvrpxPortMvrpNewPropagated	12.7.7.1.2:d, 12.7.7.3.3:d
ieee8021MvrpxPortXmitZero	12.9.2.1.3:c, 12.9.2.2.2:e

17.2.16 Structure of the MIRP MIB

The IEEE8021-MIRP-MIB provides objects to configure the Multiple I-SID Registration Protocol (MIRP) defined in Clause 39. Table 17-22 describes the relationship between the SMIv2 objects defined in the MIB module in 17.7.16 and the variables and managed objects defined in Clause 12.

Table 17-22—IEEE8021-MIRP-MIB structure and relationship to this standard

Clause 17 MIB table/object	Reference
ieee8021MirpPortTable	12.7.7
(AUGMENTS ieee8021BridgeBasePortEntry)	—
ieee8021MirpPortEnabledStatus	12.7.7.1, 12.7.7.2
ieee8021PbbBackboneEdgeBridgeObjects	12.16.1.1, 12.16.1.2
ieee8021PbbMirpEnableStatus	12.16.1.1.3:i
ieee8021PbbMirpBvid	12.16.1.1.3:j, 12.16.1.2.2:c
ieee8021PbbMirpDestSelector	Table 8-1, 12.16.1.1.3:k, 12.16.1.2.2:d
ieee8021PbbMirpPnpEnable	12.16.1.1.3:j, 12.16.1.2.2:c
ieee8021PbbMirpPnpPortNumber	12.16.1.1.3:j, 12.16.1.2.2:c

17.3 Relationship to other MIBs

17.3.14 Relationship of the IEEE8021-SRP MIB to other MIB modules

Insert the following subclauses, 17.3.15 and 17.3.16, after 17.3.14:

17.3.15 Relationship of the IEEE8021-MVRPX-MIB to other MIB modules

The IEEE8021-MVRPX-MIB, because it adds variables to the ieee8021BridgeBasePortEntry in the IEEE8021-BRIDGE-MIB, depends upon that MIB. It also imports items from the SNMPv2-SMI, SNMPv2-TC, and SNMPv2-CONF MIBs, and requires the systemGroup of the SNMPv2-MIB for conformance.

17.3.16 Relationship of the IEEE8021-MIRP-MIB to other MIB modules

The IEEE8021-MIRP-MIB, because it extends the variables in the IEEE8021-PBB-MIB (17.7.8), depends upon that MIB. Because it adds a variable to the ieee8021BridgeBasePortEntry in the IEEE8021-BRIDGE-MIB, it also depends upon that MIB. It also imports items from the SNMPv2-SMI, SNMPv2-TC, SNMPv2-CONF and Q-BRIDGE-MIB MIBs, and requires the systemGroup of the SNMPv2-MIB for conformance.

17.4 Security considerations

17.4.14 Security considerations of the IEEE8021-SRP MIB

Insert the following subclauses, 17.4.15 and 17.4.16, after 17.4.14:

17.4.15 Security considerations of the IEEE8021-MVRPX-MIB

The objects in IEEE8021-MVRPX-MIB could be manipulated to interfere with the operation of Provider Backbone Bridges. Setting ieee8021MvrpxPortNewOnly, ieee8021MvrpxPortMvrpNewPropagated, or ieee8021MvrpxPortXmitZero to the wrong value could cause New messages to be transmitted when they should not be or suppressed when they should be transmitted. This can result in the Filtering Database being flushed either too often or not at all, or in lost or spurious VLAN registrations. Extra New messages waste resources in the Bridge's supervisory processor and can cause unnecessary flooding of data frames to unknown destinations, and lost New messages can prevent connectivity until the entries in the Filtering Database time out. Lost or spurious VLAN registrations can cause the loss of connectivity for particular VLANs, or waste system resources transporting data frames to parts of the network where they are not needed.

17.4.16 Security considerations of the IEEE8021-MIRP-MIB

The following tables and objects in the IEEE8021-MIRP-MIB could be manipulated to interfere with the operation of Provider Backbone Bridges. They could, for example, prevent Multiple I-SID Registration Protocol Data Units (MIRPDUs) from reaching their intended destinations, or cause them to reach unintended destinations. The former could result in temporary loss of service due to MAC address entries being timed out, instead of being flushed. The latter could result in excessive computation time taken by the PIPs or I-components unnecessarily receiving the MIRPDUs. The following are vulnerable writable objects from the IEEE8021-MIRP-MIB:

ieee8021MirpPortTable
ieee8021MirpPortEnabledStatus
ieee8021PbbMirpEnableStatus
ieee8021PbbMirpBvid
ieee8021PbbMirpDestSelector
ieee8021PbbMirpPnpEnable
ieee8021PbbMirpPnpPortNumber

17.7 MIB modules

17.7.14 Definitions of the IEEE8021-SRP MIB module

Insert the following subclauses, 17.7.15 and 17.7.16, after 17.7.14:

17.7.15 MVRP extension MIB module

In the MIB definition below, if any discrepancy between the DESCRIPTION text and the corresponding definitions outside other clauses of this document occur, the definitions in other clauses take precedence.

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

-- ****************************************************************
-- IEEE P802.1Qbe(TM) Multiple VLAN Registration Protocol Extension MIB
-- ****************************************************************

IMPORTS
    MODULE-IDENTITY,
    OBJECT-TYPE          FROM SNMPv2-SMI    -- [RFC2578]
    TruthValue           FROM SNMPv2-TC     -- [RFC2579]
    MODULE-COMPLIANCE,
    OBJECT-GROUP         FROM SNMPv2-CONF   -- [RFC2580]
    systemGroup          FROM SNMPv2-MIB    -- [RFC3418]
    ieee8021BridgeBasePortEntry
                         FROM IEEE8021-BRIDGE-MIB -- IEEE Std. 802.1ap
   ;

ieee8021MvrpxMib MODULE-IDENTITY
    LAST-UPDATED "201104050000Z"    -- (YYYYMMDDHHMM Zulu=GMT)
    ORGANIZATION "IEEE 802.1 Working Group"
    CONTACT-INFO
       "WG-URL:   http://grouper.ieee.org/groups/802/1/index.html
        WG-EMail: stds-802-1@ieee.org
        Contact:  Norman Finn
                  c/o Tony Jeffree, IEEE 802.1 Working Group Chair
        Postal:   IEEE Standards Board
                  445 Hoes Lane
                  P.O. Box 1331
                  Piscataway, NJ 08855-1331
                  USA
        E-mail:   tony@jeffree.co.uk
       "
   DESCRIPTION
       "Multiple VLAN Registration Protocol extension module for
        managing MVRP extensions defined in IEEE 802.1Qbe
       "
   REVISION       "201104050000Z"    -- (YYYYMMDDHHMM Zulu=GMT)
   DESCRIPTION
      "Included in IEEE Std. 802.1Qbe-2011

        Copyright (C) IEEE802.1."
    ::= { iso(1) org(3) ieee(111)
         standards-association-numbers-series-standards (2)
         lan-man-stds (802) ieee802dot1 (1) ieee802dot1mibs (1) 22 }

ieee8021MvrpxMIBObjects   OBJECT IDENTIFIER ::= { ieee8021MvrpxMib 1 }
ieee8021MvrpxConformance  OBJECT IDENTIFIER ::= { ieee8021MvrpxMib 2 }
```

```
-- ============================================================
-- MVRP extension augmentation of the Generic Bridge Port Table
-- ============================================================

ieee8021MvrpxPortTable OBJECT-TYPE
    SYNTAX SEQUENCE OF Ieee8021MvrpxPortEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
       "A table that contains controls for the Multiple VLAN
        Registration Protocol (MVRP) state machines for all of the Ports
        of a Bridge."
    REFERENCE   "12.9.2"
    ::= { ieee8021MvrpxMIBObjects 1 }

ieee8021MvrpxPortEntry OBJECT-TYPE
    SYNTAX Ieee8021MvrpxPortEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
       "Each entry contains the MVRP Registrar controls for one Port."
AUGMENTS { ieee8021BridgeBasePortEntry }
    ::= { ieee8021MvrpxPortTable 1 }

Ieee8021MvrpxPortEntry ::= SEQUENCE {
        ieee8021MvrpxPortNewOnly             TruthValue,
        ieee8021MvrpxPortMvrpNewPropagated   TruthValue,
        ieee8021MvrpxPortXmitZero            TruthValue
    }

ieee8021MvrpxPortNewOnly OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
       "The mode of operation of the MVRP state machines on
        this port, if enabled.  The value of this object and the value
        of the individual Port+Attribute type enable object
        ieee8021QBridgePortMvrpEnabledStatus combine to control the
        state machines as follows:

        ieee8021MvrpxPortNewOnly
                            ieee8021QBridgePortMvrpEnabledStatus
                                                  MVRP state machines

        not implemented     true(1)           Full participant
        false(2)            true(1)           Full participant
        true(1)             true(1)           New-only participant
        not implemented     false(2)          MVRP disabled
        false(2)            false(2)          MVRP disabled
        true(1)             false(2)          MVRP disabled

        This object affects all MVRP Applicant and Registrar state
        machines on this port. A change to the value of this object
```

```
        will cause a reset of all MVRP state machines for this attribute
        type on this port.

        The value of this object MUST be retained across
        reinitializations of the management system."
    REFERENCE   "12.9.2.1.3, 12.9.2.2.2"
    DEFVAL      { false }
    ::= { ieee8021MvrpxPortEntry 1 }

ieee8021MvrpxPortMvrpNewPropagated OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
       "The mode of operation of the MVRP on this port, if enabled.
        If this object contains the value true(1), then all Static VLAN
        Registration Entries that are Registration Fixed are treated as
        Registration Fixed (New propagated), and if false(2), as
        Registration Fixed (New ignored)

        This object affects only the MVRP Applicant and Registrar state
        machines on this port. A change to the value of this object
        will cause a reset of all MVRP state machines on this port.

        The value of this object MUST be retained across
        reinitializations of the management system."
    REFERENCE   "12.7.7.1.2:d, 12.7.7.3.3:d"
    DEFVAL      { false }
    ::= { ieee8021MvrpxPortEntry 2 }

ieee8021MvrpxPortXmitZero OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
       "Selects whether MVRP is enabled to transmit 0 as the attribute
        value for the one VLAN ID for which this Port is in the untagged
        set, true(1) to enable transmit 0, and false(2) to transmit the
        VLAN ID.  The value 0 is not transmitted unless
        ieee8021MvrpxPortNewOnly is true(1).

        This feature is optional.  If not supported, the system SHALL
        NOT allow this object to be set to the value true(1).

        The value of this object MUST be retained across
        reinitializations of the management system."
    REFERENCE   "12.9.2.1.3:c, 12.9.2.2.2:e, 11.2.3.1.7"
    DEFVAL      { false }
    ::= { ieee8021MvrpxPortEntry 3 }


-- ****************************************************************
-- IEEE 802.1Qbe MVRP extension Module - Conformance Information
-- ****************************************************************
```

```
ieee8021MvrpxCompliances     OBJECT IDENTIFIER
    ::= { ieee8021MvrpxConformance 1 }
ieee8021MvrpxGroups          OBJECT IDENTIFIER
    ::= { ieee8021MvrpxConformance 2 }

-- ****************************************************************
-- Units of conformance
-- ****************************************************************

ieee8021MvrpxReqdGroup OBJECT-GROUP
    OBJECTS {
        ieee8021MvrpxPortNewOnly,
        ieee8021MvrpxPortMvrpNewPropagated,
        ieee8021MvrpxPortXmitZero
    }
    STATUS current
    DESCRIPTION
       "Objects in the MVRP extension augmentation table required
        group."
    ::= { ieee8021MvrpxGroups 1 }


-- ****************************************************************
-- MIB Module Compliance statements
-- ****************************************************************

ieee8021MvrpxCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
       "The compliance statement for support by a bridge of
        the IEEE8021-MVRPX-MIB module."

    MODULE SNMPv2-MIB -- The SNMPv2-MIB, RFC 3418
        MANDATORY-GROUPS {
            systemGroup
        }

    MODULE
        MANDATORY-GROUPS {
            ieee8021MvrpxReqdGroup
        }

    ::= { ieee8021MvrpxCompliances 1 }

END
```

17.7.16 MIRP MIB module

In the MIB definition below, if any discrepancy between the DESCRIPTION text and the corresponding definition in Clause 12 occur, the definition in Clause 12 takes precedence.

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

-- ****************************************************************
-- IEEE P802.1Qbe(TM) Multiple I-SID Registration Protocol MIB
-- ****************************************************************

IMPORTS
    MODULE-IDENTITY,
    OBJECT-TYPE              FROM SNMPv2-SMI    -- [RFC2578]
    TruthValue               FROM SNMPv2-TC     -- [RFC2579]
    MODULE-COMPLIANCE,
    OBJECT-GROUP             FROM SNMPv2-CONF   -- [RFC2580]
    systemGroup              FROM SNMPv2-MIB    -- [RFC3418]
    VlanIdOrNone             FROM Q-BRIDGE-MIB  -- [RFC4363]
    IEEE8021BridgePortNumberOrZero
                             FROM IEEE8021-TC-MIB  -- IEEE Std. 802.1ap
    ieee8021PbbBackboneEdgeBridgeObjects
                             FROM IEEE8021-PBB-MIB -- IEEE Std. 802.1ap
    ieee8021BridgeBasePortEntry
                         FROM IEEE8021-BRIDGE-MIB -- IEEE Std. 802.1ap
   ;

ieee8021MirpMib MODULE-IDENTITY
    LAST-UPDATED "201104050000Z"    -- (YYYYMMDDHHMM Zulu=GMT)
    ORGANIZATION "IEEE 802.1 Working Group"
    CONTACT-INFO
       "WG-URL:   http://grouper.ieee.org/groups/802/1/index.html
        WG-EMail: stds-802-1@ieee.org
        Contact:  Norman Finn
                  c/o Tony Jeffree, IEEE 802.1 Working Group Chair
        Postal:   IEEE Standards Board
                  445 Hoes Lane
                  P.O. Box 1331
                  Piscataway, NJ 08855-1331
                  USA
        E-mail:   tony@jeffree.co.uk
       "
   DESCRIPTION
       "Multiple I-SID Registration Protocol module for managing
        IEEE 802.1Qbe
       "
   REVISION       "201104050000Z"    -- (YYYYMMDDHHMM Zulu=GMT)
   DESCRIPTION
      "Included in IEEE Std. 802.1Qbe-2011

        Copyright (C) IEEE802.1."
    ::= { iso(1) org(3) ieee(111)
         standards-association-numbers-series-standards (2)
         lan-man-stds (802) ieee802dot1 (1) ieee802dot1mibs (1) 23 }
```

```
ieee8021MirpMIBObjects    OBJECT IDENTIFIER ::= { ieee8021MirpMib 1 }
ieee8021MirpConformance   OBJECT IDENTIFIER ::= { ieee8021MirpMib 2 }

-- ============================================================
-- MIRP augmentation of the Generic Bridge Port Table
-- ============================================================

ieee8021MirpPortTable OBJECT-TYPE
    SYNTAX SEQUENCE OF Ieee8021MirpPortEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
       "A table that contains controls for the Multiple I-SID
        Registration Protocol (MIRP) state machines for all of the Ports
        of a Bridge."
    REFERENCE   "12.9.2"
    ::= { ieee8021MirpMIBObjects 1 }

ieee8021MirpPortEntry OBJECT-TYPE
    SYNTAX Ieee8021MirpPortEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
       "Each entry contains the MIRP Participant controls for one Port."
AUGMENTS { ieee8021BridgeBasePortEntry }
    ::= { ieee8021MirpPortTable 1 }

Ieee8021MirpPortEntry ::= SEQUENCE {
        ieee8021MirpPortEnabledStatus           TruthValue
    }

ieee8021MirpPortEnabledStatus OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
       "The state of MIRP operation on this port. The value
        true(1) indicates that MIRP is enabled on this port,
        as long as ieee8021PbbMirpEnableStatus is also enabled
        for this component. When false(2) but
        ieee8021PbbMirpEnableStatus is still
        enabled for the device, MIRP is disabled on this port.

        If MIRP is enabled on a VIP, then the MIRP Participant is
        enabled on that VIP's PIP.  If MIRP is enabled on none of the
        VIPs on a PIP, then the MIRP Participant on the PIP is
        diabled; any MIRP packets received will be silently discarded,
        and no MIRP registrations will be propagated from the PIP. A
        transition from all VIPs on a PIP false(2) to at least one VIP
        on the PIP true(1) will cause a reset of all MIRP state
        machines on this PIP.

        If MIRP is enabled on any port not a VIP, then the MIRP
```

```
        Participant is enabled on that port.  If MIRP is
        disabled on a non-VIP port, then MIRP packets received will be
        silently discarded, and no MIRP registrations will be
        propagated from the port.  A transition from false(2) to
        true(1) will cause a reset of all  MIRP state machines on a
        non-VIP port.

        The value of this object MUST be retained across
        reinitializations of the management system."
    REFERENCE   "12.7.7.1, 12.7.7.2, 39.2.1.11"
    DEFVAL      { true }
    ::= { ieee8021MirpPortEntry 1 }


-- ============================================================
-- MIRP augmentation of BEB subtree
-- ============================================================

ieee8021PbbMirpEnableStatus OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
       "The administrative status requested by management for
        MIRP. The value true(1) indicates that MIRP should be enabled
        on this component, on all ports for which it has not been
        specifically disabled. When false(2), MIRP is disabled on all
        ports. This object affects all MIRP Applicant and Registrar
        state machines. A transition from false(2) to true(1) will
        cause a reset of all MIRP state machines on all ports.

        The value of this object MUST be retained across
        reinitializations of the management system."
    REFERENCE   "12.16.1.1.3:i, 12.16.1.2.2:b"
    DEFVAL      { false }
    ::= { ieee8021PbbBackboneEdgeBridgeObjects 7 }

ieee8021PbbMirpBvid OBJECT-TYPE
    SYNTAX      VlanIdOrNone
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
       "The B-VID to which received MIRPDUs are to be assigned, or 0,
        if they are to be sent on the CBP PVID."
    REFERENCE   "12.16.1.1.3:j, 12.16.1.2.2:c"
    DEFVAL      { 0 }
    ::= { ieee8021PbbBackboneEdgeBridgeObjects 8 }

ieee8021PbbMirpDestSelector OBJECT-TYPE
    SYNTAX      INTEGER {
                    cbpMirpGroup (1),
                    cbpMirpVlan  (2),
                    cbpMirpTable (3)
                }
```

```
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
       "An enumerated value specifying what destination_address and
        vlan_identifier are to be used when the MIRP Participant
        transmits an MIRPDU towards the MAC relay entity:

            cbpMirpGroup (1) Use the Nearest Customer Bridge group
                             address from Table 8-1 with the MIRP B-VID.
            cbpMirpVlan  (2) Use the Nearest Customer Bridge group
                             address from Table 8-1 with the Backbone
                             VLAN Identifier field from the Backbone
                             Service Instance table.
            cbpMirpTable (3) Use the Default Backbone Destination and
                             Backbone VLAN Identifier fields from the
                             Backbone Service Instance table.

        The value of this object MUST be retained across
        reinitializations of the management system."
    REFERENCE   "Table 8-1, 12.16.1.1.3:k, 12.16.1.2.2:d"
    DEFVAL      { cbpMirpGroup }
    ::= { ieee8021PbbBackboneEdgeBridgeObjects 9 }

ieee8021PbbMirpPnpEnable OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
       "A Boolean value specifying the administrative status requested
        by management for attaching a MIRP Participant to a PNP if
        and only if this system is a Backbone Edge Bridge (BEB):

        true(1)  The BEB is to attach a MIRP Participant to exactly one
                 Port, either a management Port with no LAN connection
                 external to the BEB, or a PNP.
        false(2) No MIRP Participant is to be present on any PNP (or
                 on the MAC Relay-facing side of a CBP).

        The value of this object MUST be retained across
        reinitializations of the management system.
       "
    REFERENCE   "12.16.1.1.3:j, 12.16.1.2.2:c"
    DEFVAL      { true }
    ::= { ieee8021PbbBackboneEdgeBridgeObjects 10 }

ieee8021PbbMirpPnpPortNumber OBJECT-TYPE
    SYNTAX      IEEE8021BridgePortNumberOrZero
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
       "The Bridge Port Number of the Provider Network Port (PNP) that
        has an associated MIRP Participant, or 0, if no Bridge Port has
        an associated MIRP Participant. This object indexes an entry in
        the Bridge Port Table.  The system SHALL ensure that either
```

```
        ieee8021PbbMirpPnpPortNumber contains 0, or that the indexed
        ieee8021BridgeBasePortType object contains the value
        providerNetworkPort(3)."
    REFERENCE   "12.16.1.1.3:j, 12.16.1.2.2:c"
    DEFVAL      { 0 }
    ::= { ieee8021PbbBackboneEdgeBridgeObjects 11 }


-- ****************************************************************
-- IEEE 802.1Qbe MIB Module - Conformance Information
-- ****************************************************************

ieee8021MirpCompliances     OBJECT IDENTIFIER
    ::= { ieee8021MirpConformance 1 }
ieee8021MirpGroups          OBJECT IDENTIFIER
    ::= { ieee8021MirpConformance 2 }

-- ****************************************************************
-- Units of conformance
-- ****************************************************************

ieee8021MirpReqdGroup OBJECT-GROUP
    OBJECTS {
        ieee8021MirpPortEnabledStatus,
        ieee8021PbbMirpEnableStatus,
        ieee8021PbbMirpBvid,
        ieee8021PbbMirpDestSelector,
        ieee8021PbbMirpPnpEnable,
        ieee8021PbbMirpPnpPortNumber
    }
    STATUS current
    DESCRIPTION
       "Objects in the MIRP augmentation required group."
    ::= { ieee8021MirpGroups 1 }

-- ****************************************************************
-- MIB Module Compliance statements
-- ****************************************************************

ieee8021MirpBridgeCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
       "The compliance statement for support by a bridge of
        the IEEE8021-MIRP-MIB module."

    MODULE SNMPv2-MIB -- The SNMPv2-MIB, RFC 3418
        MANDATORY-GROUPS {
            systemGroup
        }

    MODULE
        MANDATORY-GROUPS {
            ieee8021MirpReqdGroup
        }
```

```
    ::= { ieee8021MirpCompliances 1 }

END
```

26. Principles of Provider Backbone Bridged Network operation

26.3 Backbone VLAN connectivity

Change the last paragraph of 26.3 as follows:

The operation of MVRP within a Provider Backbone Bridged Network (PBBN) is independent of the operation of any configuration protocol within attached customer networks. The Provider Backbone Bridge MVRP address (Table 8-1) is used as the destination address of all MRPDUs transmitted in support of the MVRP Application. Frames received by CBPs and addressed to the Customer Bridge MVRP address (Table 10-1) are subject to service instance selection and relay in the same way as service frames. The MVRP Administrative Control for each B-VLAN is either Registration Fixed (New ignored) or Registration Forbidden on all CBPs, so no information is received from any Backbone Edge Bridge MVRPDU that has been erroneously transmitted by a customer system.

26.11 Mismatch defect

Insert the following subclause, 26.12, after 26.11:

26.12 Signaling VLAN registrations among I-components

A VIP is a Bridge Port. MVRP can therefore be enabled in an I-component and used to convey dynamic VLAN Registrations from I-component to I-component across a Provider Backbone Bridged Network.

In the particular case of VIPs that do not emit an S-TAG, and thus use only the I-TAG to differentiate among service instances, the Multiple I-SID Registration Protocol (MIRP, Clause 39) can be enabled instead of MVRP (11.2) to signal the need to flush learned Customer MAC Address information from one I-component to another. The network administrator can select between using MVRP or MIRP to perform this signaling according to the need to minimize the number of control frames sent (MIRP) or the number of remote I-components affected by any given control frame (MVRP).

After Clause 35, note that Clause 36, Clause 37, and Clause 38 are reserved. Then insert the following text, Clause 39:

39. Multiple I-SID Registration Protocol

The Multiple I-SID Registration Protocol (MIRP) defines an MRP application (10.1) that provides the ability to flush learned MAC Address Entries held in the Filtering Database of an I-component on a per-I-SID basis. MIRP makes use of MRP Attribute Declaration (MAD) and MRP Attribute Propagation (MAP), which provide the common state machine descriptions and the common attribute propagation mechanisms defined for use in MRP-based applications. The MRP architecture, MAD, and MAP are defined in Clause 10.

In a Provider Backbone Bridged Network (PBBN), the assignment of S-VIDs and I-SIDs to VIPs is often fixed, and the overhead of signaling the creation of Dynamic VLAN Registration Entries among I-components is undesirable. It can nevertheless be necessary to signal the need to flush the I-components' Filtering Databases of learned MAC address information. For example, one could configure a point-to-point service that is dual-homed (has two I-components) at each end of the service, only two of which (one at each end) are active at any one time. A failure that causes one I-component to take over from the other requires that the active I-component at the other end of the service forget its associations of customer MAC addresses to the failed I-component's B-MAC address. Therefore, the MIRP application supports the Registration Fixed (New propagated), instead of the Registration Fixed (New ignored), value in the Registrar Administrative Controls.

The function of MIRP can be performed by MVRP. However, in an I-component with one S-VID per VIP requires 4094 MVRPDUs, one for each VIP, to signal a simultaneous topology change on all 4094 S-VIDs, whereas it can signal those same topology changes with a single MIRPDU through the PIP.

39.1 MIRP overview

MIRP is an extension of MVRP (11.2) for use in I-components and B-components. The extensions in both I-components and B-components are as follows:

a) The attribute values carried by the Multiple I-SID Registration Protocol Data Units (MIRPDUs) are 24-bit I-SID values, rather than 12-bit VLAN IDs in an MVRPDU.
b) A MIRP Participant can only be a New-only Participant (10.6), so the Registrar Administrative Controls can take only the value, Registration Fixed (New propagated).
c) MIRP uses the Nearest Customer Bridge group address (Table 8-1) or the Default Backbone Destination from the CBP's Backbone Service Instance table (6.11) instead of an MRP Application address from Table 10-1, so a Provider Bridge forwards frames containing MIRPDUs normally, while a Customer Bridge filters them.

In an I-component only, the extensions are as follows:

d) A VIP in an I-component can be attached to an MVRP Participant or to a MIRP Participant, but not to both.
e) An MVRP to MIRP attributes translation function (39.2.1.1) enables interoperation between the MVRP and MIRP Participants in the I-component.
f) There is only one MIRP Participant and one instance of the MIRP application per Provider Instance Port (PIP).

In a B-component only, the extensions are as follows:

g) MIRP Participants are placed on zero or more Customer Backbone Ports (CBPs), and on at most one non-CBP Port in the B-component.
h) MAP (10.3) operates among MIRP MAD components only, using 24-bit MIRP I-SID values.

Figure 39-1 illustrates the architecture of MVRP and MIRP in an I-component. The arrows showing the relationship between the MVRP or MIRP applications and the filtering database in the MAC Relay Entity have been omitted from Figure 39-1, but these relationships are the same as those shown in Figure 11-1.

The architecture of MIRP in a B-component is illustrated in Figure 39-2. One management Port and one CBP are shown, although any number of CBPs can be supported. (See 39.2.2 for an alternate model.)

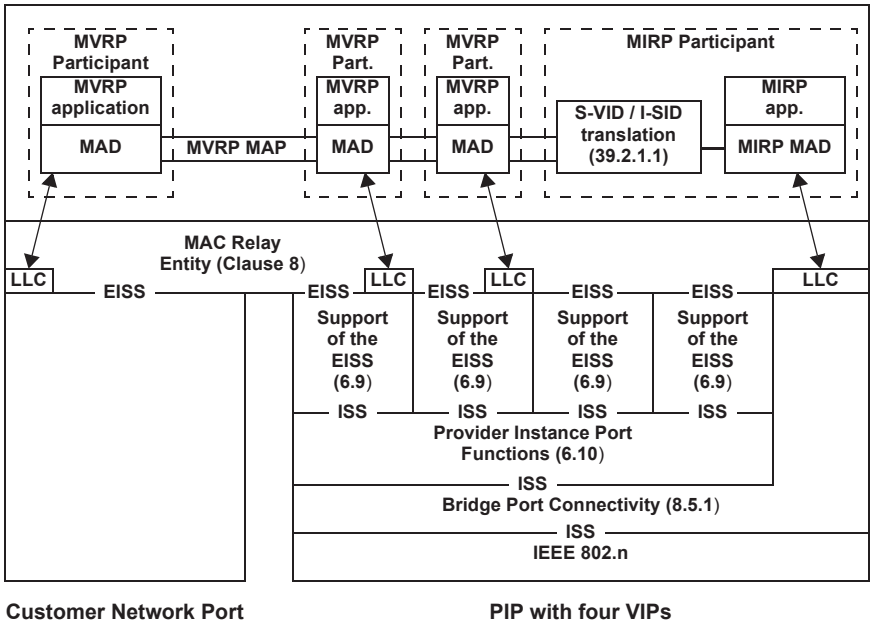

Figure 39-1—Operation of MIRP in an I-component

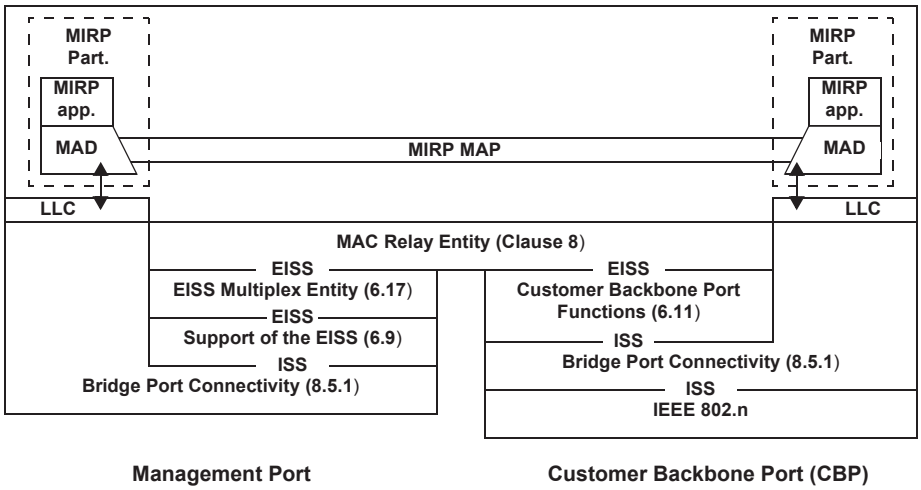

Figure 39-2—Operation of MIRP in a B-component

39.1.1 Behavior of I-components

Since Provider Backbone Bridges are insulated from Customer MAC addresses by the I-TAG, MVRP Participants in I-components are peers of MVRP Participants in other I-components, and not with MVRP Participants attached to Provider Network Ports in B-components or Backbone Core Bridges. In the case that an I-component is configured for some number of VIPs, each serving some number of VLANs, a single MIRPDU transmitted or received over the PIP takes the place of the individual MVRPDUs that would otherwise be transmitted or received over those VIPs.

An I-component supporting MIRP shall:

a) Implement the MIRP application as indicated in 39.2;
b) Implement an MVRP/MIRP attributes translation function as indicated in 39.2.1.1; and
c) Support operation only as an MRP New-only Participant (10.6).

39.1.2 Behavior of B-components

As illustrated in Figure 39-2, there are any number of MIRP Participants in a B-component, each on a CBP, and each containing an instance of the MIRP application and a MIRP MAD, with the MADs interacting via MAP. In addition, at most one MIRP Participant is attached to a Port that is not a CBP. This port can be a Provider Network Port (PNP), or a Management Port with no attachment to an external LAN. The latter case is shown in Figure 39-2.

A B-component supporting MIRP shall:

a) Implement the MIRP application as indicated in 39.2; and
b) Support operation as an MRP New-only Participant (10.6).

39.2 Definition of the MIRP application

39.2.1 Definition of MRP protocol elements

39.2.1.1 S-VID and I-SID mapping in an I-Component

MVRP MAP (11.2.1, 10.3) propagates information among the MVRP MADs and the MIRP MAD. But, since MVRP MADs support 12-bit VLAN ID values, and the MIRP MAD supports 24-bit I-SID values, a translation function is required to map the VIP-ISID to or from S-VIDs statically configured on the VIP.

When a “new” MIRP declaration is received on a given VIP as a result of receiving an MIRPDU from the attached LAN (MAD_Join.indication), the MAD_Join.request with the *new* parameter set that is generated by the MIRP MAD is translated to a MAD_Join.request for each S-VLAN with a Static VLAN Registration Entry of Registration Fixed (New propagated) on that VIP. When any MIRP declaration with the *new* parameter is received on a given VIP as a result of a request from MAP (MAD_Join.request) for any S-VLAN with a Static VLAN Registration Entry of Registration Fixed (New propagated) on that VIP, it is translated to a MAD_Join.request for that VIP’s I-SID with the *new* parameter set. All other requests are discarded.

NOTE—If many S-VLANs are configured per VIP, then using an MVRP New-only Participant (11.2.6) offers more detailed control of MAC address flushing than does MIRP, at some cost in bandwidth and processing effort.

39.2.1.2 I-SID translation in a B-component

If a Backbone Service Instance table (6.11) on a CBP implements the Local Service Instance Identifier (Local-SID) field, the attribute values encoded in MIRPDUs by the MIRP Participants in CBPs shall be Local-SID values. The attribute values transferred by MAP in the B-component and encoded in MIRPDUs by the MIRP Participant on a non-CBP Port shall be Backbone-SID values.

39.2.1.3 MAP Context for MIRP

The MIRP MAP Context identifies the set of Ports that form the applicable topology for the propagation of the MIRPDUs among the MIRP Participants. Within a single I-component, the MIRP Participants on PIPs behave as independent end stations from an I-SID registration perspective and correspondingly there is no further propagation of the MIRPDUs. As described in 39.2.1.1, the S-VID/I-SID translation function allows the MIRP MADs to communicate with MVRP MADs. Thus, New messages can propagate throughout a concatenated network of PBNs (via MVRP) and PBBNs (via MIRP).

Within a single B-component, there may be multiple MIRP MAP Contexts. The reason for having separate MIRP MAP Contexts is to collect and distribute MIRP information bound for or received from MIRPDUs that use different combinations of B-VIDs and MAC addresses, as chosen by the network administrator via managed objects (12.16.1). A Port in a B-component supporting a MIRP Participant, either an administratively chosen PNP or Management Port, or a CBP, can participate in more than one MIRP Context. The Ports of a B-component comprising a given MIRP Context is a PNP or Management Port, plus the set of CBPs on the B-component for which the following are true:

a) The CBP is in the Member set (8.8.9) for the B-VID; and
b) If the MIPRDU destination_address for the CBP is the Default Backbone Destination address, the Filtering database does not filter that B-VID and MAC address on the Port.

In a B-component, the parameters controlling MIRPDU addressing (39.2.1.6) control the number of MIRP MAP Contexts as follows:

c) If a single destination_address and B-VID are used for all MIRPDUs [item (a) in 39.2.1.6] then there is a single MIRP MAP Context.
d) If the Nearest Customer Bridge group address (Table 8-1) used with a B-VID from a Backbone Service Instance table [item (b) in 39.2.1.6], then there is a separate MIRP MAP Context for each B-VID that appears in the CBP Backbone Service Instance table (6.11) of any CBP with a configured MIRP Participant.
e) If the Default Backbone Destination option for the MIRPDU destination_address is used [item (c) in 39.2.1.6], then there is a separate MIRP MAP Context for each combination of Default Backbone Destination and B-VID in the CBP Backbone Service Instance table (6.11) of any CBP with a configured MIRP Participant.

The MIRP Participant on a CBP propagates information for a particular I-SID between the CBP MIRP MAD and the appropriate MIRP MAP Context, as determined by the CBP's Backbone Service Instance table and the addressing selection parameters (39.2.1.6). Thus, a CBP MIRP MAD may exchange requests and indications with multiple MIRP MAP Contexts.

NOTE 1—MIRPDUs cannot pass through the Customer Backbone Port functions (6.11) because they have no I-TAG. We can see from Figure 39-2 and Figure 39-3 that this isolates the MIRPDUs exchanged among PNPs, Management Ports (and CBPs in Figure 39-3) over the backbone from the MIRPDUs exchanged over the various I-component–to–CBP links.

NOTE 2—See 39.2.2 for an alternate model for MIRP operation in a B-component and the MIRP MAP Context.

39.2.1.4 MAP Context identification for MIRP

In an I-component, there is only one MAP Context.

In a B-component, the vlan_identifier and destination_address of an MIRPDU received on a PNP or Management Port serve to identify the MIRP MAP Context as defined in 39.2.1.3. In a CBP, the MIRP MAP Context used to propagate information is determined by CBP Backbone Service Instance table (6.11) entry for each I-SID value propagated. An MIRPDU that corresponds to no MAP Context configured on the receiving B-component is discarded.

39.2.1.5 MIRP application addressing in an I-component

The source MAC address for an MIRPDU is the MAC address of the PIP.

The destination MAC address for an MIRPDU transmitted from a PIP shall be the Nearest Customer Bridge group address, (01-80-C2-00-00-00, see Table 8-1).

MIRPDUs transmitted and received on a PIP carry no VLAN tag and have no vlan_identifier.

NOTE—An MIRPDU transmitted by a PIP needs no B-TAG because it is connected to a CBP (see Figure 25-4) that either has an MIRP Participant to receive the untagged MIRPDU, or if not, discards the MIRPDU (39.2.1.3).

39.2.1.6 MIRP application addressing in a B-component

The source MAC address for an MIRPDU is the MAC address of the Port from which it is transmitted.

For a MIRP Participant attached to a CBP, the destination MAC address for an MIRPDU transmitted shall be the Nearest Customer Bridge group address, (01-80-C2-00-00-00, see Table 8-1). MIRPDUs shall be transmitted from a CBP without a VLAN tag.

For the MIRP Participant attached to a PNP or Management Port, there are three choices, selectable via managed variables [see item (k) in 12.16.1.1.3], for the destination MAC address and B-VLAN on transmitted MIRPDUs:

a) The destination_address is the Nearest Customer Bridge group address (Table 8-1), and the vlan_identifier is the MIRP B-VID [item (c) in 12.16.1.2.2].
b) The destination_address is the Nearest Customer Bridge group address (Table 8-1), and the vlan_identifier is a Backbone VLAN Identifier (B-VID) from the CBPs' Backbone Service Instance tables (6.11).
c) The destination_address is a Default Backbone Destination from the CBPs' Backbone Service Instance tables (6.11), and the vlan_identifier is a Backbone VLAN Identifier (B-VID) from those tables.

In case (b) or case (c), it is possible that different CBPs in the serving I-SIDs in the same MIRP MAP Context (39.2.1.3) can be configured differently. For each I-SID value's message in the MIRPDU, the MIRP Participant on the PNP or Management Port uses the Backbone Service Instance table from the CBP with the lowest numerical Port Number to determine the {destination_address, vlan_identifier} pair to use for that I-SID value.

A separate MIRPDU is transmitted for each separate MIRP MAP Context. If multiple {destination_address, vlan_identifier} pairs are generated by different I-SIDs within a single MIRP MAP Context, then the MIRP Participant shall transmit at least one MIRPDU for each distinct pair.

NOTE 1—The network administrator can use the destination_address and vlan_identifier configuration choice to optimize either for the fewest transmitted MIRPDUs by using case (a), for the fewest unnecessarily addressed I-components by using case (c), or for a balance of these two conflicting optimizations by using case (b).

NOTE 2—If different B-components in a single Provider Backbone Bridged Network are configured differently for MIRP application addressing, then MIRPDUs can be lost or misinterpreted, because the different B-components can classify MIRPDUs in different MAP Contexts.

NOTE 3—See 39.2.2 for an alternate model for MIRP operation in a B-component and MIRPDU addressing.

39.2.1.7 MIRP application EtherType

The EtherType used for MIRPDUs shall be the MIRP EtherType identified in Table 10-2.

39.2.1.8 MIRP ProtocolVersion

The ProtocolVersion for the version of MIRP defined in this standard takes the hexadecimal value 0x00.

39.2.1.9 MIRP AttributeType definitions

MIRP defines a single Attribute Type (10.4.2.2) that is carried in MRP protocol exchanges, as follows:

Attributes identified by the I-SID Vector Attribute Type are instances of VectorAttributes (10.4.1), used to identify a sequence of values of Backbone Service Instance Identifiers (I-SIDs). The value of AttributeType used to identify the I-SID Vector Attribute Type in MRPDUs (10.4.2.2) shall be 1.

39.2.1.10 MIRP FirstValue definitions

The FirstValue field in instances of the I-SID Vector Attribute Type shall be encoded in MRPDUs (10.4) as three octets, taken to represent an unsigned binary number, and equal to the value of the VIP-ISID parameter for the VIP.

The range of permitted I-SID values that can be encoded in the FirstValue fields in MIRP is restricted to those not listed in Table 9-3.

39.2.1.11 Administrative controls

MIRP supports only the Registration Fixed (New propagated) value of the Registrar Administrative Controls (10.7.2) and this value cannot be manipulated by management. Therefore, the MRP Registrar Administrative Control (12.7.7.1, 12.7.7.2) can only take the value New propagated.

The provision of static control over the ability of Applicant state machines to participate in protocol exchanges is achieved by means of the Applicant Administrative Control parameters associated with the operation of MRP (10.7.3). Where management capability is implemented, the Applicant Administrative Control parameters can be applied and modified by means of the management functionality defined in 12.9.

The management controls in Clause 12 operate per Bridge Port, but a MIRP Participant is attached to a PIP, which is not a Bridge Port. Therefore, if MIRP is enabled on any VIP on a PIP, then the MIRP Participant is enabled on that PIP. If MIRP is disabled on all of the VIPs on a PIP, then the MIRP Participant on the PIP is disabled.

The choice of destination_address and vlan_identifier used in an MIRPDU from a B-component are made by an enumerated configuration parameter [item (d) in 12.16.1.2.2] and a B-VLAN configuration parameter [item (c) in 12.16.1.2.2].

39.2.2 Alternate MIRP model for B-components

An alternate model for the operation of MIRP in a B-component is illustrated in Figure 39-3. This model is perfectly interoperable with that presented in 39.2.1 and Figure 39-2, is indistinguishable, in terms of required protocol behavior, from that model, and thus can be used to implement MIRP. In this alternate model, there is a pair of communicating MIRP Participants in each CBP, separate from a similar pair in every other CBP, with no MIRP Participant on any PNP or management Port. The LAN-facing MIRP Participant (the right-hand MIRP Participant in Figure 39-3) corresponds to the CBP MIPR Participant described in 39.2.1. The Relay-facing MIRP Participant (the left-hand MIRP Participant in Figure 39-3) is attached to the EISS Connectivity (39.2.2.1). Its functions correspond to those of the MIRP Participant on a PNP or Management Port in 39.2.1 and Figure 39-2.

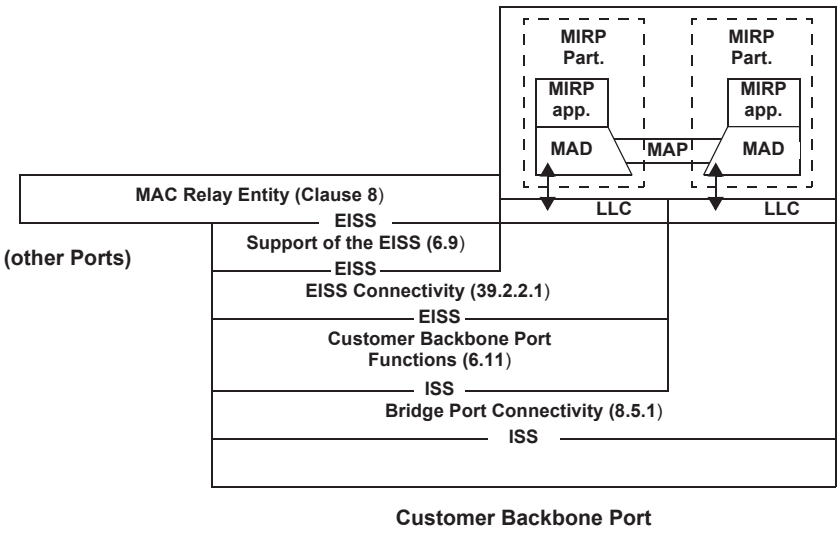

Figure 39-3—Alternate model for MIRP in a B-component

NOTE 1—Because the Customer Backbone Port functions (6.11) do not pass frames without I-TAGs, the Relay-facing MIRP Participant can exchange MIRPDUs only through the MAC Relay Entity, and the LAN-facing MIRP Participant only through the LAN.

NOTE 2—The only difference between the models in Figure 39-2 and Figure 39-3 that visible to an observer external to the B-component is that the alternate model can issue MIRPDUs with different source_address parameters, while a the PNP model issues all MIRPDUs with the same source_address. Since MRP and MIRP make no use of that parameter, this difference does not affect the operation of the protocol.

39.2.2.1 EISS Connectivity

The EISS Connectivity function is identical to the Bridge Port Connectivity of 8.5.1, except that it supports the EISS (6.8) instead of the ISS (6.6).

Each EM_UNITDATA.indication provided by the lower EISS access point (Figure 39-3) shall result in a corresponding EM_UNITDATA.indication with identical parameters at each of the access points supporting the MAC Relay and Higher Layer Entities. (Only one such Higher Layer Entity is shown in Figure 39-3.) Each EM_UNITDATA.request from the EISS access point supporting the MAC Relay Entity shall result in a corresponding EM_UNITDATA.indication with identical parameters at each of the access points for the Higher Layer Entities, and a corresponding EM_UNITDATA.request with identical parameters at the lower access point. Each EM_UNITDATA.request from an ISS access point supporting a Higher Layer Entity shall result in a corresponding EM_UNITDATA.indication with identical parameters at the access points for

the MAC Relay Entity, and at other access points for Higher Layer Entities, and a corresponding EM_UNITDATA.request with identical parameters at the access point for the LAN.

The MAC_Enabled, MAC_Operational, and operPointToPointMAC status parameters for the EISS access point for the MAC Relay Entity and Higher Layer Entities shall take the same value as that for the lower access point if that is present, and shall be True otherwise (i.e., if the Port is a Management Port).

39.2.2.2 Alternate MIRP MAP Context

There is a single MIRP MAP Context per CBP, that includes both of the MIRP Participants on that CBP but no MIRP Participant on any other CBP.

39.2.2.3 Alternate MIRPDU addressing

The addressing requirements for the two MIRP Participants on a CBP are different. The LAN-facing MIRP Participant behaves as described in 39.2.1.6. The Relay-facing MIRP Participant follows the rules described for the PNP or Management Port in 39.2.1.6. Since there is only one Backbone Service Instance Table (6.11) per CBP, there is no ambiguity with regard to MIRPDU addressing. The MIRPDU addressing control parameters described in 39.2.1.6 apply to every Relay-facing MIRP Participant.

NOTE 1—The model in Figure 39-3 results in the CBPs communicating MIRP information via MIRPDUs, instead of via the MIRP MAP, as in Figure 39-2, and all of those MIRPDUs would be output to the rest of the Provider Backbone Bridged Network, as well.

39.2.3 Use of “new” declaration capability

MIRP supports the Registration Fixed (New propagated) value for the Registrar Administrative Controls for a Port in a Static VLAN Registration Entry. MIRP will accept and propagate a New Message received on that Port for that VLAN and propagate it to all other Ports.

When any MIRP declaration marked as “new” is received on a given VIP, either as a result of receiving an MIRPDU from the attached LAN (MAD_Join.indication), or as a result of receiving a request from the MAP (via the S-VID/I-SID translation function [39.2.1.1]) for the MIRP Application (MAD_Join.request), any entries in the I-component’s filtering database for that Port and for the VLANs corresponding to the attribute value in the MAD_Join primitive are removed.

39.2.4 Attribute value support requirements

Implementations of MIRP shall be capable of supporting all attribute values in the range of possible values that can be registered using MIRP. An I-component shall be capable of maintaining current state information for at least 4094 attributes in the range of possible values. A CBP implementation shall support the full range of attribute values that are supported, in turn, by its Backbone Service Instance table.

39.2.5 MRP Message filtering

A MIRP Participant operates in Registration Fixed (New propagated) mode only. Therefore, any MIRP Message for an attribute that is not a VIP-ISID (for an I-component) or a Local-SID or Backbone-SID (for a CBP) is ignored by a MIRP Participant.

Annex A

(normative)

PICS proforma—Bridge implementation[2]

A.5 Major capabilities

Insert the following row at the end of A.5:

Item	Feature	Status	References	Support
MIRP	Is the Multiple I-SID Registration Protocol (MIRP) supported?	BEB-I OR BEB-B: O	5.7.1:e, 5.8.1:e	Yes [ ] No [ ]

A.14 Bridge Management

Insert the following row at the end of A.14:

Item	Feature	Status	References	Support
MGT-211	Does the BEB support all of the MIRP managed objects?	MIRP AND BEB-I: M	12.16.1	Yes [ ]

A.21 MVRP

Insert the following rows at the end of A.21:

Item	Feature	Status	References	Support
MVRP14	Does the bridge support an MVRP New-only participant?	O	11.2.6	Yes [ ] No [ ]
MVRP15	Does the MVRP Participant transmit the Attribute value 0 as specified in 11.2.3.1.7?	MVRP14: M	11.2.3.1.7	Yes [ ]
MVRP16	Does the bridge interpret the Attribute value 0 in an MVRP message as the PVID for the Port?	M	11.2.3.1.7	Yes [ ]
MVRP17	Does MVRP ignore New messages in MVRPDUs for VLANs not Registration Fixed (New propagated) when configured for New propagated?	MVRP14: M	11.2.6	Yes [ ]

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A.24 Management Information Base (MIB)

Insert the following rows at the end of A.24:

Item	Feature	Status	References	Support
MIB-34	Is the IEEE8021-MVRPX-MIB module fully supported (per its MODULE-COMPLIANCE)?	MIRP AND MIB: M	17.7.15	Yes [ ]
MIB-35	Is the IEEE8021-MIRP-MIB module fully supported (per its MODULE-COMPLIANCE)?	MIRP AND MIB: M	17.7.16	Yes [ ]

A.31 Stream Reservation Protocol

Insert the following subclause, A.32, after A.31:

A.32 MIRP

Item	Feature	Status	References	Support
MIRP-1	Does the Bridge allow both MIRP and MVRP to be enabled on the same Virtual Instance Port?	MIRP AND BEB-I: M	12.9.2.2.2	No [ ]
MIRP-2	Does the I-component implement MIRP as specified in 39.2?	MIRP AND BEB-I: M	39.1.1:a	Yes [ ]
MIRP-3	Does the I-component propagate attributes freely between MVRP and MIRP Participants?	MIRP AND BEB-I AND MVRP: M	39.1.1:b	Yes [ ]
MIRP-4	Does the I-component support operation as an MRP New-only Participant?	MIRP AND BEB-I: M	39.1.1:c	Yes [ ]
MIRP-5	Does the B-component implement the MIRP application as specified?	MIRP AND BEB-I: M	39.1.2:a	Yes [ ]
MIRP-6	Does the B-component support operation as an MRP New-only Participant?	MIRP AND BEB-I: M	39.1.2:b	Yes [ ]
MIRP-7	Does the B-component translate I-SIDs in MIRPDUs as required?	MIRP AND BEB-I: M	39.2.1.2	Yes [ ]
MIRP-8	Does the I-component transmit every MIRPDU with the Nearest Customer Bridge group address?	MIRP AND BEB-I: M	39.2.1.5	Yes [ ]
MIRP-9	Does the I-component or B-component transmit MIRPDUs with the MIRP EtherType from Table 10-2?	MIRP: M	39.2.1.7	Yes [ ]
MIRP-10	Does the I-component or B-component use 1 as the attribute type in MIRPDUs?	MIRP: M	39.2.1.9	Yes [ ]
MIRP-11	Does the I-component or B-component encode the I-SIDs in the MIRPDU as 3-octet binary values?	MIRP: M	39.2.1.10	Yes [ ]
MIRP-12	Does the I-component or B-component support the full range of attribute values in MIRPDUs?	MIRP: M	39.2.4	Yes [ ]

Item	Feature	Status	References	Support
MIRP-13	Does the I-component support at least 4094 attribute values?	MIRP AND BEB-I: M	39.2.4	Yes [ ]
MIRP-14	Does the B-component support at least as many attribute values as supported by its Backbone Service Instance table?	MIRP AND BEB-B: M	39.2.4	Yes [ ]
MIRP-15	Does the B-component transmit at least one MIRPDU for each distinct pair of destination MAC address and VLAN identifier identified by the managed variables?	MIRP AND BEB-B: M	39.2.1.6	Yes [ ]