CFM in TPMR

MAC_Operational control

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Introduction

Two bridges interconnected via one or more TPMRs

- Establishes a repeatered line
- TPMRs operate in Link (or Section) layer
- Two MA always associated with a repeatered line
  - Multiplex Section MA (MEPs in bridges, MIPs in TPMRs)
  - Optional Regenerator Section MA (MEPs in bridges and TPMRs)
    - If not present/activated the Physical Media MA (no CFM support) replaces this RS-MA

Two application cases to consider

a. Link terminates at both bridges
b. Link continues at at least one of the bridges (provides port-based interface)

Two ownership cases to consider

1. Single owner
2. Multi owner (e.g. customer, provider)
   - Requires support of customer and provider/operator Mas

Two Service/Link layer separation cases

A. Separate service and link layers (Tagged interface with empty untagged set)
B. Combined service/link layer (untagged interface, or with non-empty untagged set)
Introduction

Following slides illustrate the layers with their MEPs and MIPs in the different cases

- A1a: the most straightforward case
- A1b: requires an additional Link CFM MEP in PB CEP and PBB CNP when those must support a TPMR
- B1a/B1b: variant on A1a/A1b, no separation between service and link layers
- A2a/B2a: note the additional TPMR segment MA, located between MS- and RS-MAs with endpoints in one bridge and one TPMR
- A2b/B2b: these two variants have a problem; they essentially require “overlapping MAs”. The MS-MA (between the two bridges) overlaps with the Provider MA (starting at TPMR and passing through second bridge). Two alternative MA configurations are illustrated; alternative 1 has the provider MA terminate at the bridge and no monitoring of the TPMR segment, alternative 2 also includes an additional TPMR segment MA.

MAC Status (MAC_operational) is determined by the MEPs as specified in clause 19.2.8/802.1ag. The MS-MA MEP in the bridges controls the MAC_Operational of the interface; any interruption of the chain results in a loss of CCMs and consequently a MAC_operation set to false. MAC Status propagation from TPMR to Bridge is as such not necessary; this is an implicit feature of CFM.
TPMR layers

Single owner

C-VLAN or S-VLAN or BSI layer

Link layer

Phy Media

VLAN/Link layer

this MEP controls MAC_Operational @ B2 as per clause 19.2.8/802.1ag

C/S/I-Tagged interface with empty untagged set

Port-based service in B2

untagged interface

Port-based service in B2
TPMR layers

Multiple owners, Tagged interface

C/S/I-Tagged interface with empty untagged set

Port-based service in B2

VLAN UNI

C-VLAN or S-VLAN or BSI layer

UNI
TPMR layers

Multiple owners, untagged interface

Customer

Provider

B1

TPMR

TPMR

TPMR

B2

B2a
untagged interface

B2b
Port-based service in B2

VLAN/Link layer

Phy

M

i

Phy

M

i

Phy

M

i

Alternative 1

Alternative 2

Port-based service

in B2

Customer

Provider

TPMR

B1

TPMR

TPMR

TPMR

B2