Use of unidirectional media in PBB-TE

(supporting 802.1Qay D1.1 comment that PBB-TE service instance may consist of a single ESP with CFM reply information carried via distinct VLAN or ESP connectivity)

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Purpose of presentation

We previously presented a requirement to support a PBB-TE Unidirectional Service Instance consisting of a single ESP (with CFM replies carried by a means not related to the Service Instance).

We were asked to describe an application that makes use of such a Unidirectional Service Instance.
PBB-TE Service Instance definition

- Current SI definition requires co-routed forward and return ESPs
- ...But 802.3 explicitly supports *unidirectional* PHY (see 22.2.4.1.12).
  - 1000BASE-PX-D PHY defaults to unidirectional; others can be provisioned
- Implies co-routed ESP *not* always possible
IPTV Configuration

- Video distribution is highly asymmetric
- Vendors sell high-cap cards with only transmit or only receive transceiver (large cost saving)
- Return traffic uses low-cap port and can be aggregated
IPTV Configuration with PBB-TE

- Unidirectional traffic-engineered IPTV streams
- PBB-TE is alternative to MPLS or ATM for IPTV
Not a corner-case

• The use of unidirectional media in PBB-TE is *not* a corner-case.
  – E.g., is a recognized element of IPTV architecture.
• Unidirectional media are supported by 802.3
• UDLR (RFC3077) hides unidirectionality of medium from router.
PBB-TE Unidirectional Service Instance

Service Instance comprising a single ESP with CFM reply traffic carried by means independent of the Service Instance (VLAN or ESP).

*No objection* to treating Unidirectional and Bidirectional Service Instances as separate entities.
Examples of PBB-TE Service Instances

PBB-TE
P2P Bidirectional SI

PBB-TE bidirectional
PMP SI

PBB-TE
P2P Unidirectional
SI (with
independent VLAN
or ESP for CFM
reply)

PBB-TE PMP
Unidirectional SI
(with VLAN for
CFM reply)
3.5 Point-to-Point PBB-TE service instance: An instance of the MAC service provided by two unidirectional co-routed ESPs forming a bidirectional service.

3.6 Point-to-Multipoint PBB-TE service instance: An instance of the MAC service provided by a set of ESPs which comprises one multipoint ESP plus n unidirectional point-to-point ESPs, routed along the leaves of the multicast ESP.

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3.5 Point-to-Point PBB-TE Unidirectional service instance: An instance of the MAC service provided by two unidirectional co-routed ESPs forming a bidirectional service.

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3.7 Point-to-Point PBB-TE Unidirectional service instance: An instance of the MAC service provided by a single ESP.

3.8 Point-to-Multipoint PBB-TE Unidirectional service instance: An instance of the MAC service comprised of a single multipoint ESP.