

Use of unidirectional media in PBB-TE

(supporting 802.1Qay D1.1 comment that PBB-TE service instance return path cannot be required to be co-routed with forward path)

January 2008

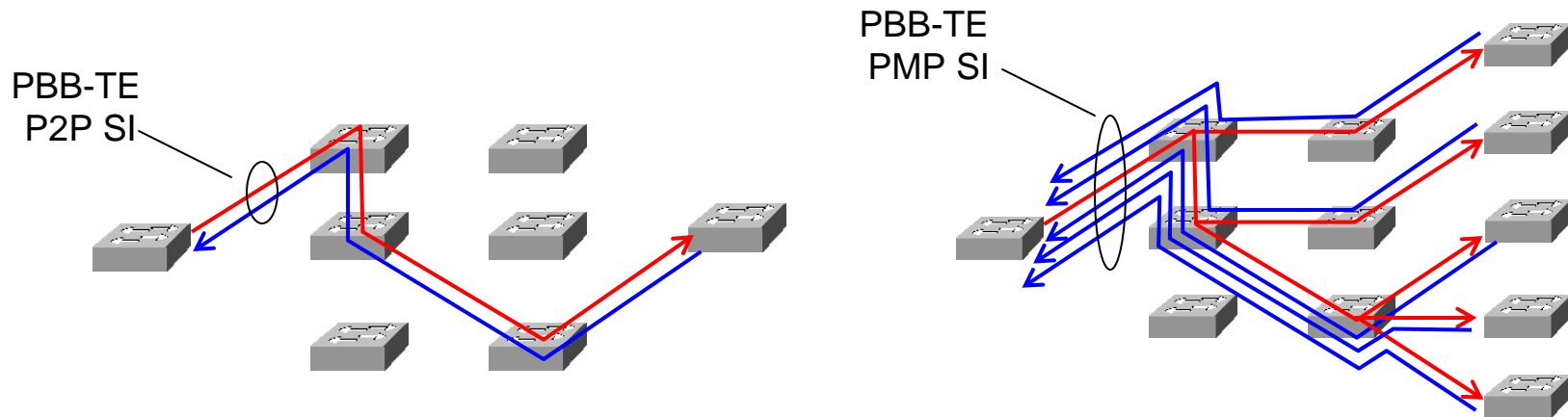
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Purpose of presentation

We previously presented a requirement to support a PBB-TE Service Instance in which a co-routed return path is not present.

We were asked to describe an application that makes use of such a Service Instance.

PBB-TE Service Instance definition



- Current SI definition requires that forward and return ESP(s) be co-routed
- ...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

Why we don't see VLAN Bridges with unidirectional media

VLANs with unidirectional media:

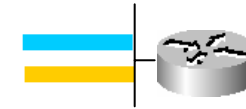
- Cannot rely on STP to guarantee loop freedom
 - no BPDU in reverse direction
- Require manual configuration of parameters that are typically controlled by L2 protocols

But these are not limitations in PBB-TE environment:

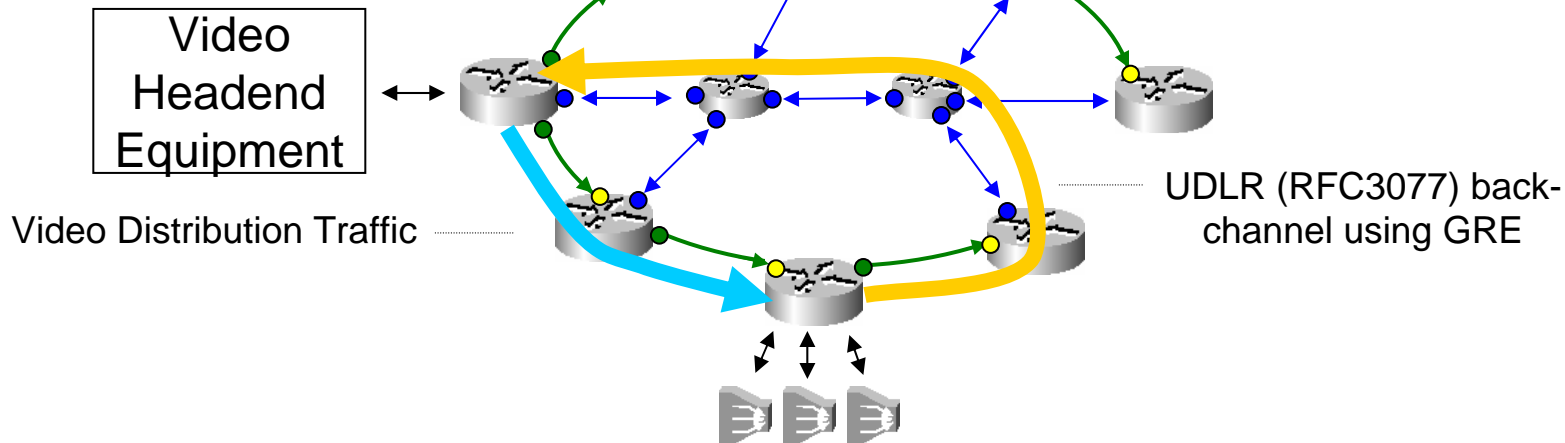
- STP is not used
- Parameters are provisioned

Typical IPTV Configuration

- Low-speed xmit/rcv port
- High-speed xmit port
- High-speed rcv port

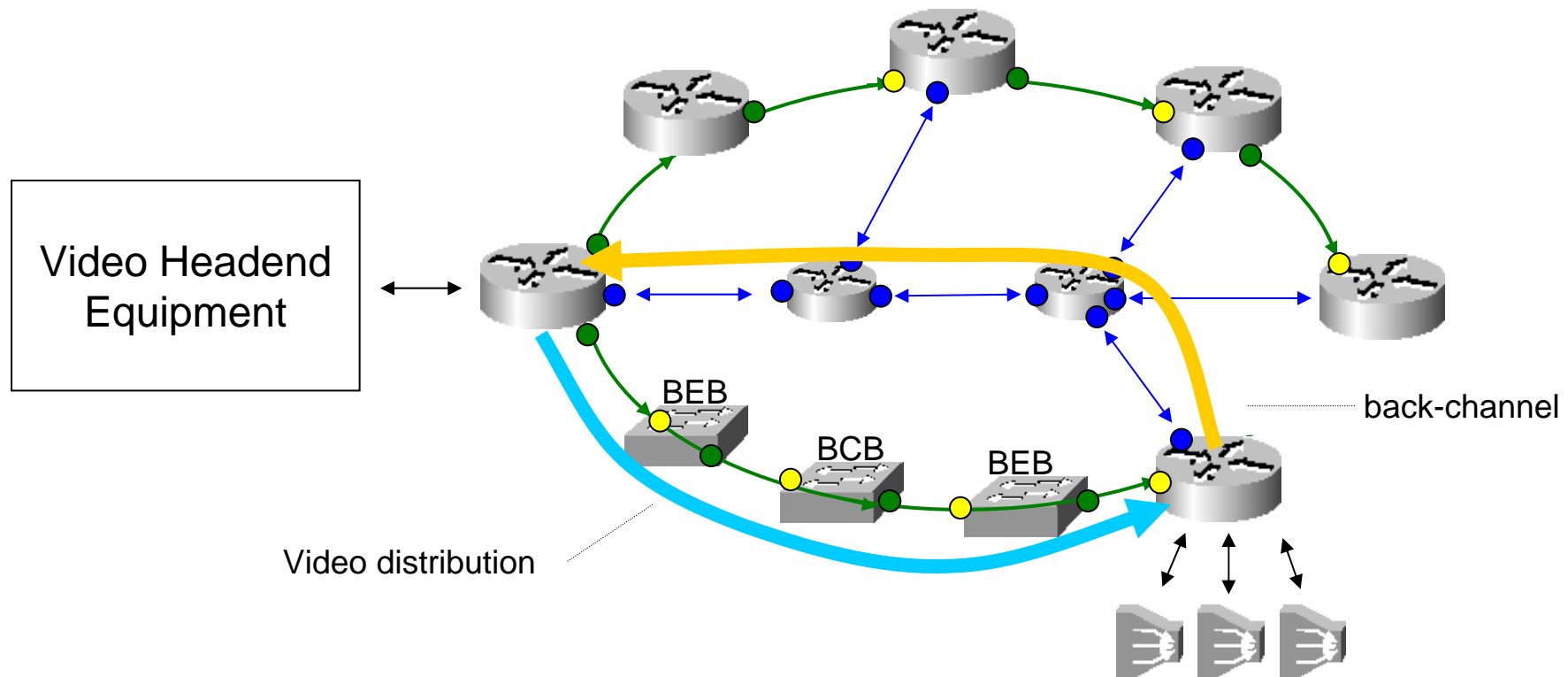


Router sees backchannel traffic on unidirectional port (so router can function normally)



- 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

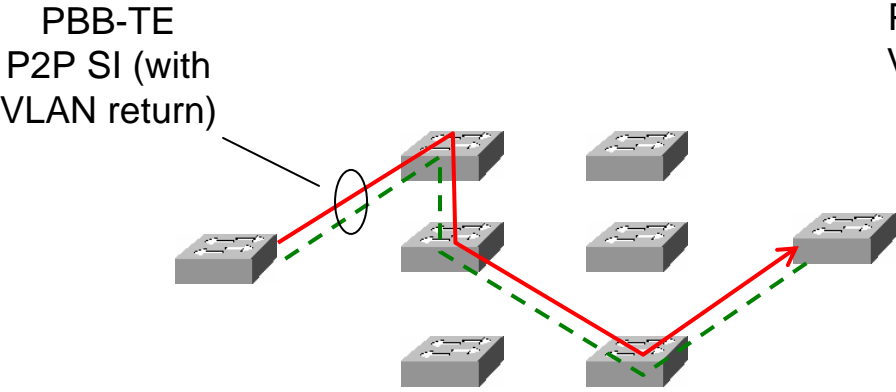
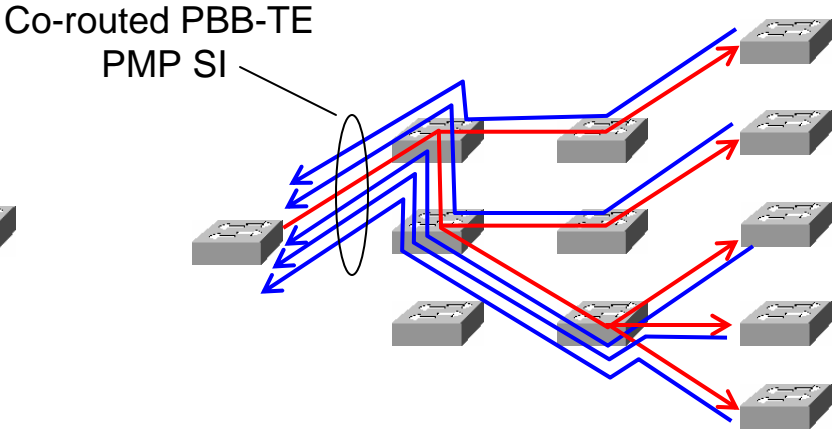
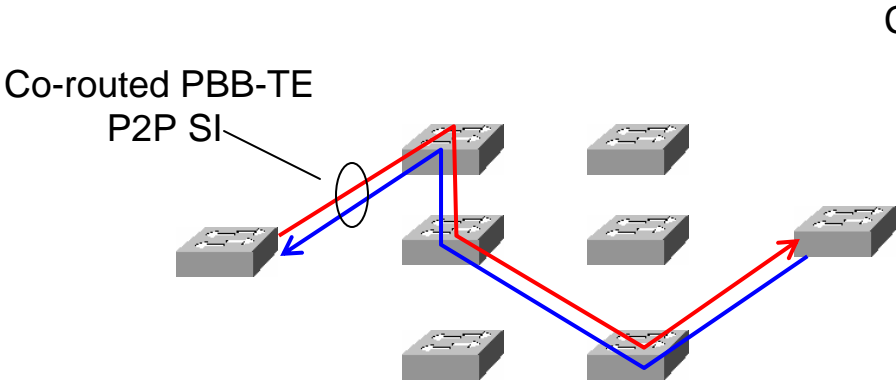
- The use of unidirectional media in PBB-TE is not a corner-case.
 - E.g., is a recognized element of IPTV architecture.
- Unidirectional media are supported by 802.3
- UDLR (RFC3077) hides unidirectionality of medium from router.

Proposed PBB-TE Service Instance

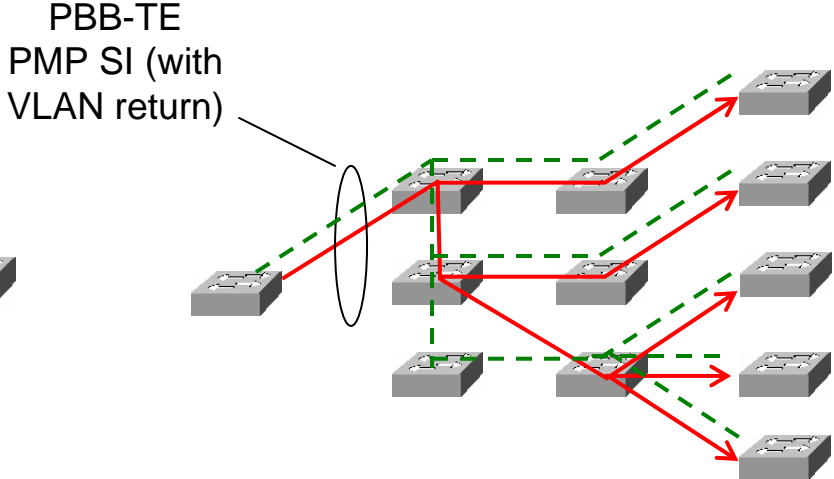
Service Instance comprising an ESP in the forward direction optionally coupled with ESP or VLAN connectivity in the return direction (ie., no requirement for co-routing)

No objection if the special case of a PBB-TE Service Instance, comprising co-routed ESPs, is given a distinguishing name such as *PBB-TE co-routed SI*

Examples of PBB-TE Service Instance



Example shows co-routed VLAN return



Example shows non co-routed VLAN return

Proposed Change

change

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."

to

3.5 Point-to-Point PBB-TE service instance: An instance of the MAC service provided by an ESP in the forward direction and by either an ESP or a VLAN in the return direction.

3.6 Point-to-Multipoint PBB-TE service instance: An instance of the MAC service comprised of a multipoint ESP in the forward direction plus either n point-to-point ESPs (ie., from each leaf to root) or a VLAN in the return direction (or some combination thereof).