802.1Qay: PBB-TE Interface Stacks

Version 1

Stephen Haddock

November 5, 2007

802.1 Plenary, Atlanta

Will the PIP and CBP interface stacks specified for PBB work for PBB-TE?

If not, what needs to change?

Backbone MAC Headers

- In PBB, the backbone MAC header fields are derived:
  - B-SA is the address of the PIP.
  - B-DA is determined in the I-component based on the combination of S-VID and C-DA.
  - B-VID is determined in the B-component based on the I-SID.
- For PBB-TE, does it matter if the B-DA and B-VID are determined in different components?
- Alternatives for PBB-TE:
  1. Keep the same structure as PBB.
  2. Move the B-DA (and B-SA) assignment to the CBP.
  3. Move the B-VID assignment to the PIP.

C-DA Considerations

Determination of any field that is dependent upon the C-DA should remain in the I-component.

- The I-component already has a Filtering Database that learns customer addresses and has lookups keyed on C-DA + S-VID.
- If this were moved to the B-component, “Norm’s rule” of address uniqueness says that the lookup key would need to be C-DA + S-VID + I-SID at a bundled service interface, or C-DA + I-SID at a one-to-one service interface.
  - Norm’s rule: A provider can demand that MAC addresses are unique within a given customer network, but cannot demand that MAC addresses are unique across different customers. Therefore a MAC address can only be assumed to be unique in combination with the S-VID.
- If this were moved to the B-component, customer addresses would need to be learned at every E-NNI.

Implications for B-DA Determination

- In PBB, the B-DA is determined in the I-component because it is dependent on C-DA + S-VID.
- If PBB-TE is ever to support multipoint backbone service instances, then the B-DA determination should remain in the I-component.
- If PBB-TE is ever to be extended to support E-NNIs in the future, then the B-DA determination should remain in the I-component.
- Even if multipoint and E-NNI are not considerations, there is no reason that the B-DA needs to be moved out of the I-component.

B-VID Determination

- In PBB, the B-VID is determined in CBP based on the I-SID.
- In PBB-TE, the semantics of the B-VID change to be a path selector to the destination (B-DA).
- If all frames in a give backbone service instance should take the same path to the destination, then the B-VID can be determined by the I-SID alone.
  - This is always the case for pt-to-pt backbone service instances.
  - For multipoint backbone service instances it is conceivable that we could choose to allow different B-VID values for different destinations on the same backbone service instance.
    - May not be a good idea since it would likely result in multicast frames taking a different path to a given destination than unicast frames.
    - Even if we want to allow this, which would make B-VID determination dependent on B-DA + I-SID combination, could still do this in the CBP.
- No reason to move the B-VID assignment from the CBP.

Where does the “tunnel” start?

- In Stockholm, in the presentation ay-vissers-clarifications-0907-v2, we were presented with alternatives A, B, C, and D for where the Backbone Service (BS) and Backbone Tunnel (BT) layers terminated.
- Consensus was none of the above, but closest to a “C2” model where the BS layer was PIP-to-PIP, and the BT layer was CBP-to-CBP.
  - Maarten appears to have interpreted this as requiring that the B-DA/B-SA encapsulation moves to the CBP.
  - My interpretation was that the extent of the BT layer was determined by when all three parameters (B-SA, B-DA, and B-VID) of the BT came together. This is at the CBP since that is where the B-VID is determined, but it does not require that the B-DA/B-SA encapsulation move from the PIP to the CBP.

Recommendation

- The PIP and CBP interface stacks defined for PBB can and should be used for PBB-TE
  - There is no need to move the B-DA determination (or the B-DA/B-SA encapsulation) from the PIP to the CBP.
  - There is no need to move the B-VID determination from the CBP to the PIP.