Priority Management in PBB-TE

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IEEE Plenary Meeting November 2007

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PBB priority management

- Frame fields that are used for priority management:
  - PCP : Priority Code Point (3 bits)
  - DEI : Drop Eligible Indicator (1 bit)
- These fields exist in the following frames tags:
  - B-Tag - Backbone priority
  - I-Tag – Provider priority
  - S-Tag – Customer priority

| |
|---|
| B-DA |
| B-SA |
| B-VID |
| I-SID |
| DA |
| SA |
| S-VID |
| C-VID |
| Payload |

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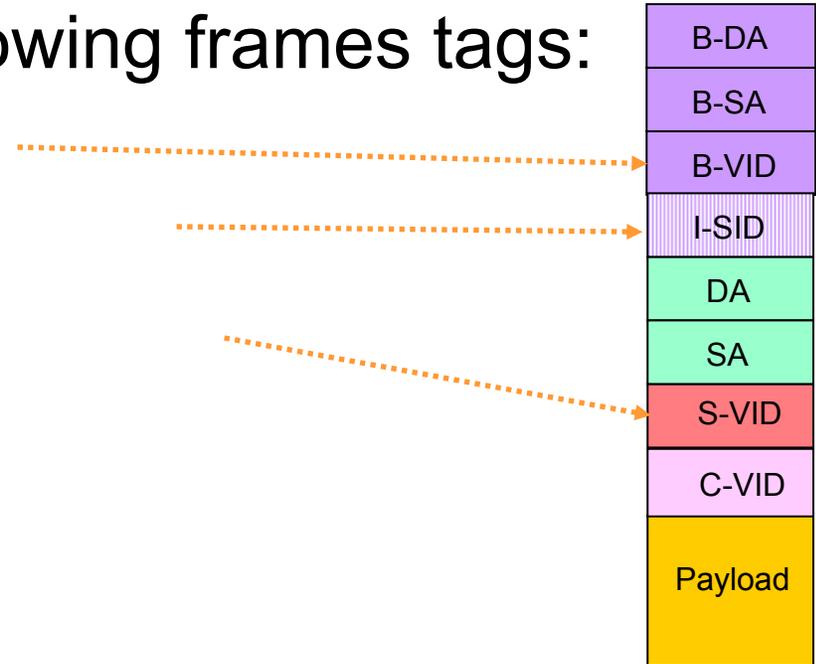
Definitions

- Customer-based priority ESP - CP-ESP
  - The frames are handled in the backbone according to the original priority of the customer's frame.
  - The customer PCP is copied to the backbone PCP.
  - Compiles with the PCP behavior defined in 802.1ah

- Backbone-based priority ESP - BP-ESP
  - The frames are handled in the backbone according to the trunk configuration.
  - The customer's PCP is preserved.
  - The backbone PCP is assigned by management.

- From the TE point of view, BP-ESP is superior, since it enables Traffic Engineering (TE) and CAC.

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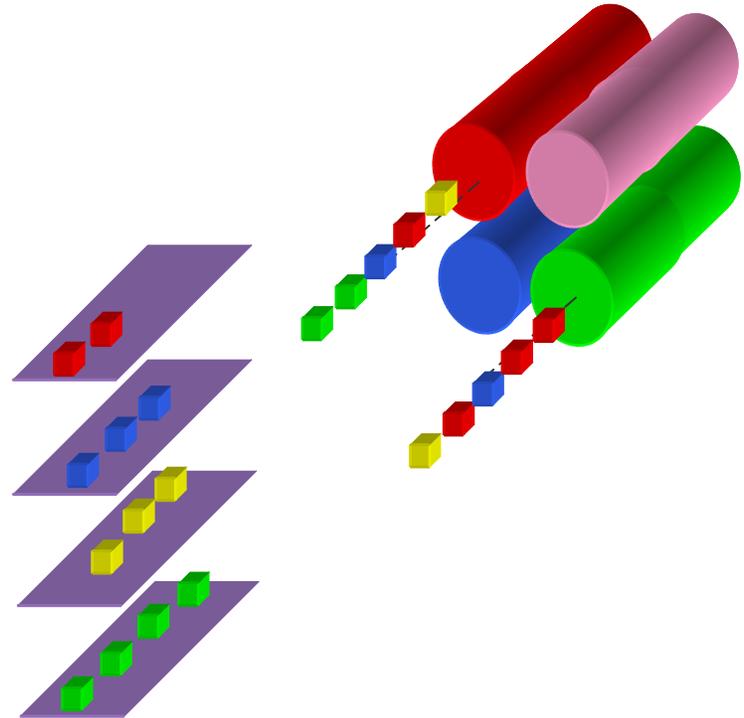
Definitions (cont'd)

- CP-ESP:
  - Customer-based priority
  - Similar to the MPLS E-LSP (EXP-Inferred-PSC LSP)
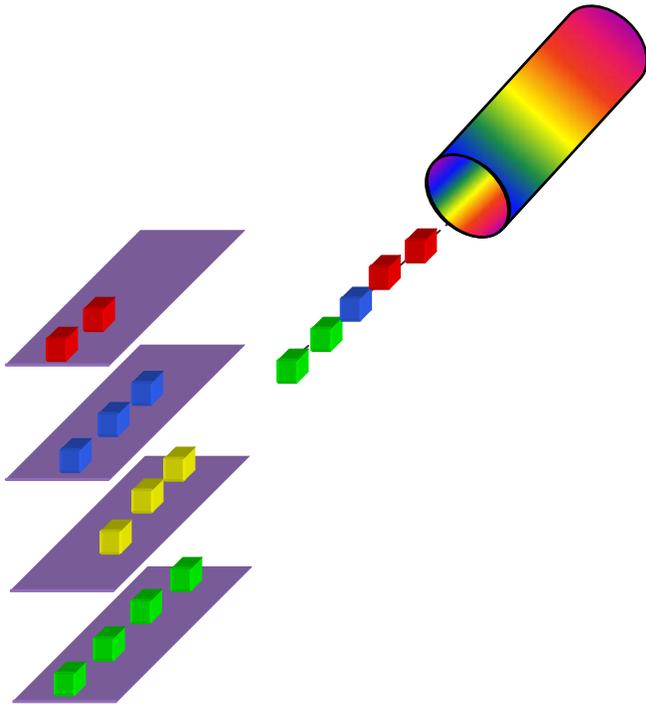
- BP-ESP:
  - Backbone-based priority
  - Similar to the MPLS L-LSP (Label-Inferred-PSC LSP)

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PCP and DEI bits in 802.1ah

- Using PBB, the PCP and DEI bits are permeated from the S-TAG through the I-TAG to the B-TAG.
- The original priority and drop eligible bits are preserved on the backbone:
  - From the customer's network to the backbone:
    - On the VIP, the drop-eligible and priority parameters are copied from the S-PCP and S-DEI to the I-PCP and I-DEI respectively.
    - On the CBP, the drop-eligible and priority parameters are copied from the I-PCP and I-DEI to the B-PCP and B-DEI respectively.

| B-PCP | B-DEI | ←— copy —| I-PCP | I-DEI | ←— copy —| S-PCP | S-DEI |

  - From the backbone to the customer's network:
    - On the CBP, the drop-eligible and priority parameters are copied from the B-PCP and B-DEI to the I-PCP and I-DEI respectively.
    - On the VIP, the drop-eligible and priority parameters are copied from the I-PCP and I-DEI to the S-PCP and S-DEI respectively.

| B-PCP | B-DEI |—— copy —→| I-PCP | I-DEI |—— copy —→| S-PCP | S-DEI |

PCP and DEI bits in 802.1Qay

- The purpose of PBB-TE is to provide mechanisms for carriers to engineer and provision deterministic, connection-oriented trunks within the Provider Backbone network.

- One such mechanism is the capability to provision traffic priority in the backbone.

- The DEI bit in the B-Tag can be handled as follows:
  - Determined by policing in the VIP or CBP
  - Copied from the S-Tag when no policing is needed

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PCP bits in 802.1Qay

A trunk can be a CP-ESP.
Customer priority is preserved in all TAGs :
S-TAG, I-TAG and B-TAG

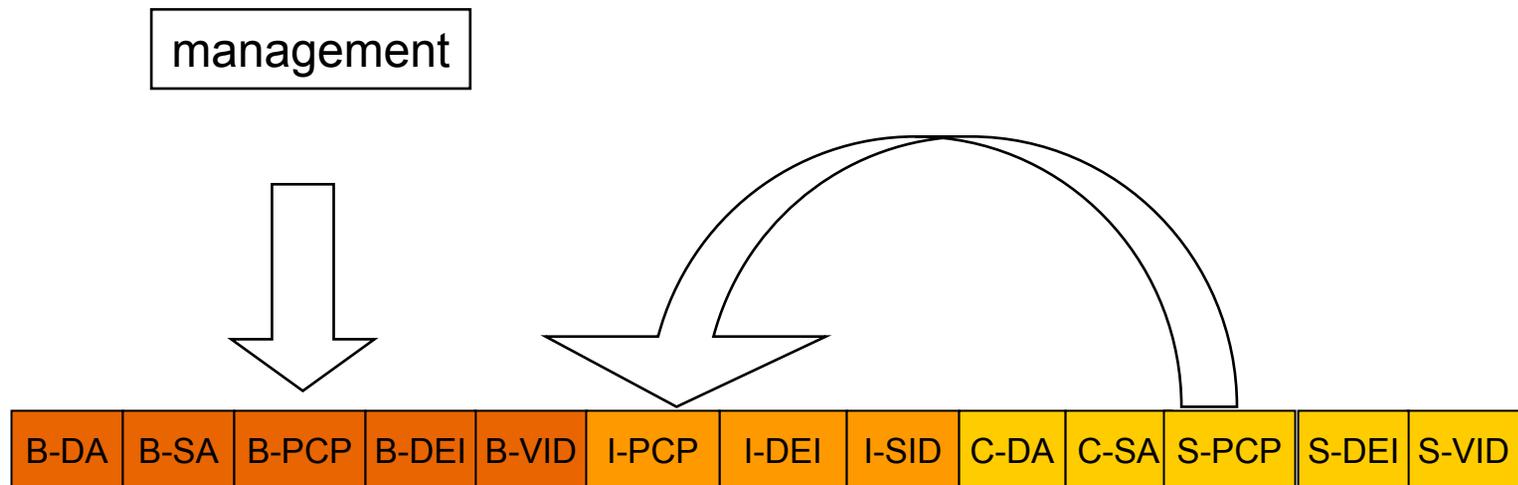| B-DA	B-SA	B-PCP	B-DEI	B-VID	I-PCP	I-DEI	I-SID	C-DA	C-SA	S-PCP	S-DEI	S-VID
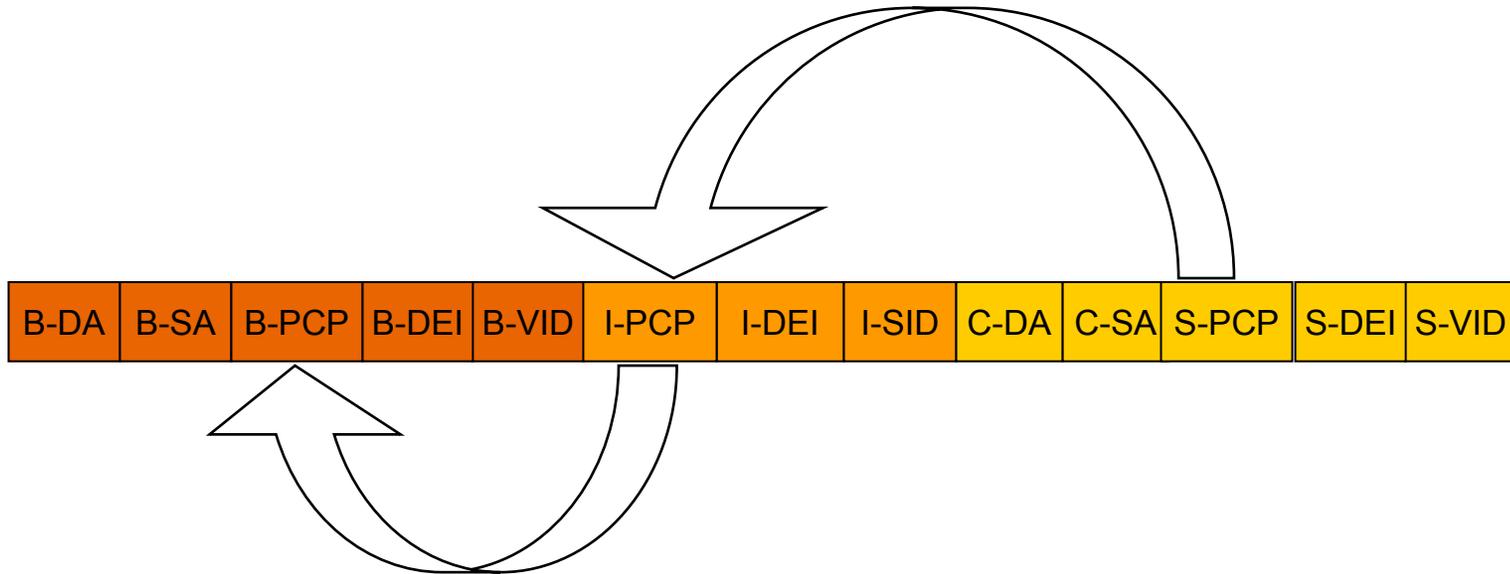
PCP bits in 802.1Qay (cont'd)

A trunk can be a BP-ESP.
Customer priority is preserved only in the S-TAG
(if preserved) and in the I-TAG.
The priority of the B-TAG is determined by management.

management

B-DA	B-SA	B-PCP	B-DEI	B-VID	I-PCP	I-DEI	I-SID	C-DA	C-SA	S-PCP	S-DEI	S-VID

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Conclusion

As traffic engineering of trunks is a major characteristic of PBB-TE, it is proposed that we adopt the BP-ESP concept and support both CP-ESP and BP-ESP.

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Thank You

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