E-NNI registration protocol

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Agenda

- Background
- Motivation
- Problem definition
- Suggested new standard

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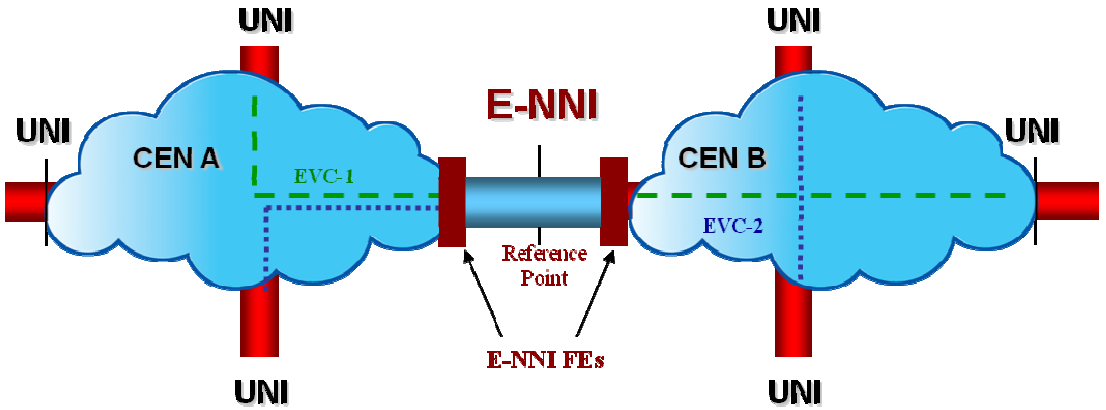
Background



- In order for two carriers (domains) to peer, there is a need for an external NNI.
- E-NNI is a reference point where two Service Providers meet in support of specified MEF Services.
- The E-NNI reference point is defined to exist between control domains

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Motivation

- Inter carrier (inter Domain) service provisioning automation is gaining place in carrier packet transport
- Ethos with NSN, BT,BGU & TKK are developing a solution for inter carrier Ethernet transport under the FP7 European research programs
- MEF had defined the E-NNI as a building block for inter carrier Ethernet transport (currently static and only S-VLAN)
- E-NNI registration must needs be supported at control plane in order to enable automatic /TE service provisioning

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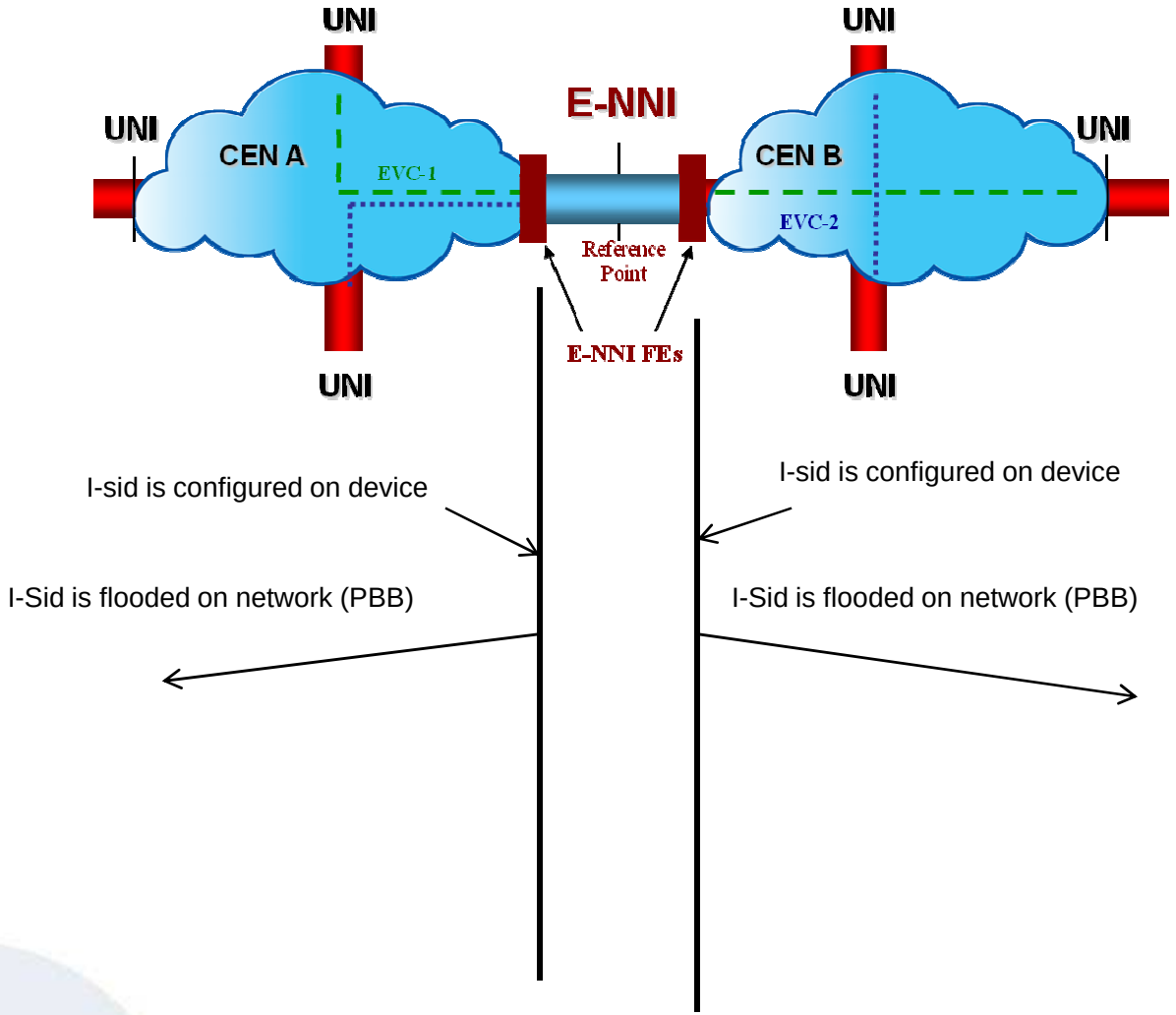
Current situation



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Problem definition

- PBB-TE does not supports PBBN peering
- There is I interface definition for PBB but registration of unknown I-tag on the peered E-NNI port is not defined
- No solution for inter provider connectivity for configuration verification
- In addition B-tag translation at E-NNI may be required to limit B-SA MAC learning between two domains
- PBB-TE must rely on external agent to be configured. The inter-carrier case raises problems with:
  - NMS connectivity between two carriers
  - Authority over ports configurations
  - Configuration synchronization

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Solution layers

There are four possible layers to the suggested solution:

1. E-NNI Configuration Verification
2. I-NNI registration protocol
3. E-NNI registration protocol
4. Inter provider registration protocol

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Scenario 1 – configuration verification

- Two peering carriers
- Both peering over PBB (PBB-TE) based E-NNI
- Both agreed on connectivity definitions
- Each configure its own side of the E-NNI
- Need mechanism to verify configurations (e.g. 802.1ab subset)

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Scenario 2 – I-NNI registration

- Carrier has two or more domains
- Services may span several domains
- Want to configure only UNIs in order for service to be configures
- Need mechanism to configure the I-NNI

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Scenario 3 – E-NNI configuration

- Two peering carriers
- Both peering over PBB/PBB-TE based E-NNI
- Both agreed on connectivity definitions of a B tunnel
- Carrier 1 bought a B tunnel from carrier 2 and wants to add another I service within the tunnel
- Carrier 1 configure its own side of the E-NNI
- This information needs to be propagated and configured at carrier 2 side of the E-NNI

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Scenario 3 – E-NNI configuration

- Two peering carriers
- Both peering over PBB/PBB-TE based E-NNI
- Both agreed on connectivity definitions of a B tunnel
- Carrier 1 bought a B tunnel from carrier 2 and wants to add another I service within the tunnel
- Carrier 1 configure its own side of the E-NNI
- This information needs to be propagated and configured at carrier 2 side of the E-NNI (including end points at carrier 2 network)

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Scenario 4 – Inter provider registration

- Two peering carriers
- Both peering over PBB/PBB-TE based E-NNI
- Both agreed on connectivity definitions of B tunnels
- Carrier 1 bought a B tunnel from carrier 2 and wants to add another I service within the tunnel
- Carrier 1 configure its UNI side
- This information needs to be propagated and configured at carrier 1 E-NNI and carrier 2 side of the E-NNI

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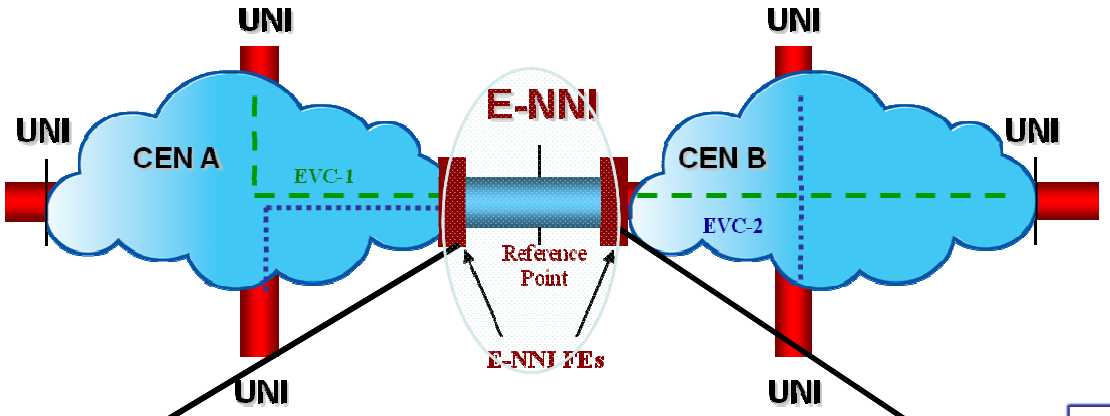
Suggested solution

- Add multi domain and E-NNI interface definitions to PBB-TE
- Add to E-NNI functionality the following capabilities:
  - Discovery and advertizing of E-NNI functionality and configuration
  - Automatic I tag (S-VLAN) registration / stitching/ translation mechanisms within the data plane. (extend I/S interface functionality to include B-TAG) by invoking external agent for unknown I-tag at E-NNI
  - Optionally add B-SA translation at E-NNI to limit scope of B-SA MAC

Suggested solution



Independent PBB / PB domain

Advertize capabilities

Advertize capabilities

I-sid is configured on device

Advertize new configuration with I-sid'

Invoke external agent

Get authorization and configuration

Confirm configuration

I-sid is flooded on network (PBB)

I-sid'' is flooded on network (PBB)

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