ME6E-FP and ME6E-PR

draft-matsuhira-me6e-fp-00.txt
draft-matsuhira-me6e-pr-00.txt

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What is ME6E

• Multiple Ethernet - IPv6 address mapping encapsulation
  – Ethernet over IPv6 encapsulation technology
  – break VLAN limitation (4095)
  – unicast routing basis, not emulate learning bridge
    • possible L2 unicast communication without L3 multicast routing

• ME6E-FP and ME6E-PR
  – both use same address / frame format
  – FP(Fixed Prefix) for own routing domain
  – PR(Prefix Resolution) for own / non own routing domain
ME6E Frame format and ME6 address

ME6E Frame format

- Encapsulate Ethernet Frame with IPv6 header
- There is no Next header value represent “Ethernet”
  - Use EtherIP header?
  - Request IANA to assign Next header value of “Ethernet”

ME6 address format (IPv6 address)

- Use both source and destination address
- Plane ID = VLAN-ID, tenant ID, VPN ID
  - 16bits Plane ID: 65535 (maybe not enough but better than 4095)
  - 32bits Plane ID: 4.3 billion (can forget limitation)
- How to resolve Prefix value?
  - ME6E-FP (fixed prefix) and ME6E-PR (prefix resolution)
ME6E-FP (fixed Prefix)

- ME6 address format (IPv6 address)

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Plane ID</th>
<th>MAC address</th>
</tr>
</thead>
</table>

- ME6E-FP Processing

IPv6 header | Ethernet header | Payload

- MAC address (frame by frame)
- IPv6 address
- Prefix (pre-configured)
- Plane ID (pre-configured)

- Communication with ME6E-FP

Host A
- MAC-A
- IPv6-A

ME6E-FP

Host B
- MAC-B
- IPv6-B

Route for IPv6-B

Route for MAC-B (mapped to IPv6 addr)
ME6E-PR (Prefix Resolution)

- ME6 address format (IPv6 address)

- ME6E-PR Processing
  - IPv6 header
  - Ethernet header
  - Payload
  - IPv6 address
  - MAC address (frame by frame)
  - Prefix
  - Plane ID (pre-configured)
  - Plane ID and MAC address

- ME6E-PR table (pre-configure)

- Communication with ME6E-PR

Host A
- MAC-A
- IPv6-A

ME6E-PR
- ME6E-PR table

ME6E-PR
- Route for IPv6-B
- IPv6-B

Host B
- MAC-B
- IPv6-B
Applicability of ME6E-FP and ME6E-PR

The Internet

Virtual Ethernet by ME6E-PR

VM

VM

Data Center

Direct Connect

operate routing

Virtual Ethernet by ME6E-FP

VM

VM

Data Center

VM

VM

Data Center

VM

VM

Data Center

VM

VM

Data Center
Next Step

• Now preparing related I-Ds (coming soon)

• Interest ?

• adapt WG item ?
backup
## SA46T vs ME6E

### SA46T frame format

- **IPv6 header**
- **IPv4 header**
- **Payload (Layer 3)**

- **IPv6 address**
- **SA46T Process**
- **Plane ID**

### SA46T address (IPv6)

- **Prefix**
- **Plane ID**
- **IPv4 address**

### ME6E-FP frame format

- **IPv6 Header**
- **Ethernet Header**
- **Payload (Layer 2)**

- **IPv6 address**
- **ME6E-FP Process**
- **Plane ID**

### ME6 address (IPv6)

- **Prefix**
- **Plane ID**
- **MAC address**