IPv6 over ATM Interworking Function
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V6OPS WG

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Background - IPv4 over ATM

- TR101 defines the requirement of IPoATM between BNG and CPE

Figure: End-to-end protocol processing for IPoA access
Challenge - when migrate to IPv6

• For upstream packets, the IPv6oA IWF needs to know which BNG to send to

• For downstream packets, BNG needs to know MAC address of destination

• IPv6 address resolution applies Neighbor Discovery Protocol
  – beyond layer 3 (Contrast: ARP of IPv4 is in layer 2)
  – control packet contains information of layer 2, e.g. MAC address, which needs to be changed in IPoA/IPoE interworking

IPv6oA IWF should support both the IPv6 address resolution and the functions of IPv4oA IWF
Approach overview

- CPE: support Inverse Neighbor Discovery based on ATM
- BNG: support Neighbor Discovery based on Ethernet
- IWF: between above two kinds of networks, achieve smooth communication between them
Downstream address resolution

- CPE
- IWF6
- BNG

**Downstream packets**

- Inverse Neighbor Solicitation (IPv6oATM)
- Inverse Neighbor Advertisement (IPv6oATM)

**ND Proxy**

- Neighbor Solicitation _NUD_

- Neighbor Advertisement

**IND Proxy**

- Downstream packets

**IPoE/IPoA Encapsulation conversion**

- Downstream packets (IPoATM)

**Control packet**

- Data packet
Link layer address change in packets

IWF6 changes the Src/Dst Link-layer Address option value to Ethernet Link-layer Address for upstream packets or ATM Link-layer Address for downstream packets.

An upstream example
The number of BNGs connecting to an IWF6 is much less than the number of IWF6s connecting to a BNG

⇒ It is suggested to manually configure the BNG MAC on IPv6oA IWF node
Advantages

- Support the evolution from traditional IPoA to IPv6oA
- IPv6oA IWF is layer 2 device – scalable on current network, cost-saving
- Zero touch on BNG
- Dynamics Processing, easy to manage
Next steps

• Is V6OPS interested in this draft?
• What would be the next steps to progress this draft?