IPv6 over ATM Interworking Function
draft-zhang-v6ops-ipv6oa-iwf-01

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Background - IPv4 over ATM

- TR101 defines the requirement of IPoATM between BNG and CPE
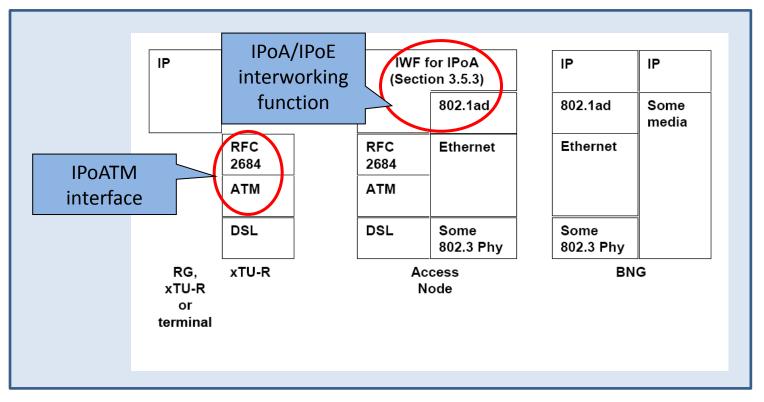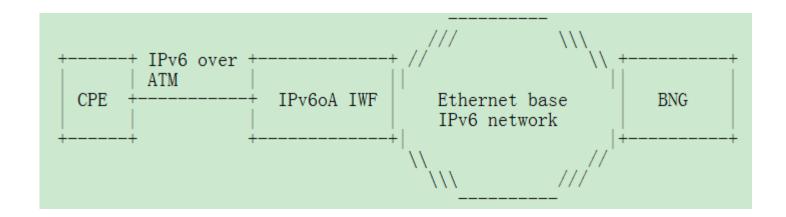

Figure: End-to-end protocol processing for IPoA access

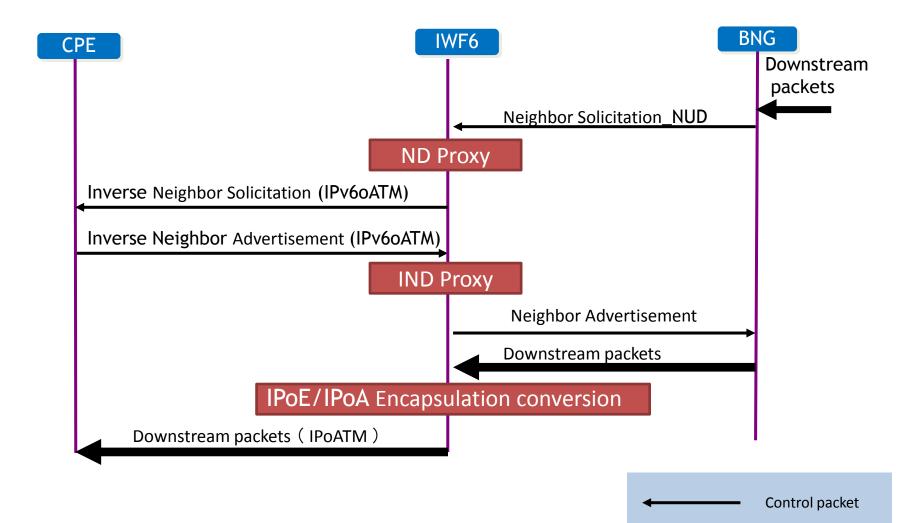# Challenge - when migrate to IPv6

- 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 layer2 , 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
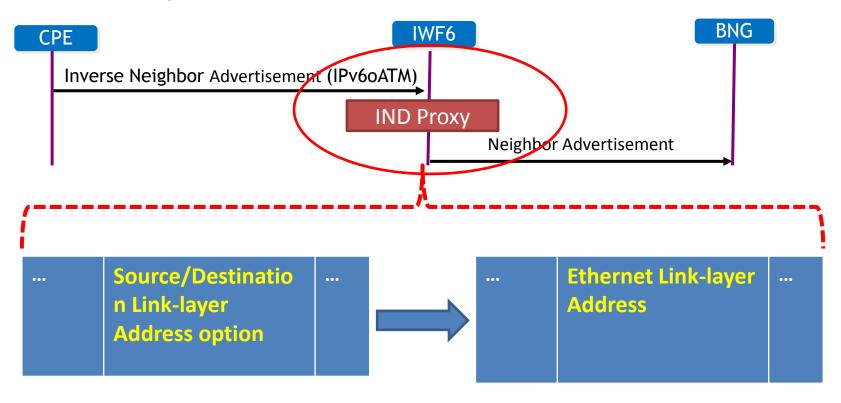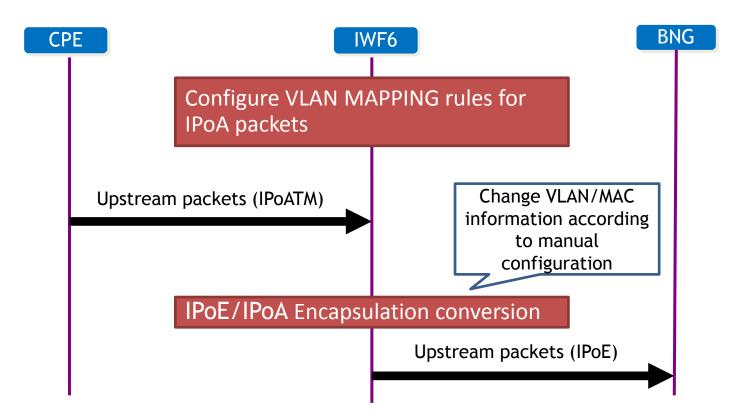
Downstream address resolution

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

Upstream address resolution

CPE   IWF6   BNG

Configure VLAN MAPPING rules for IPoA packets

Upstream packets (IPoATM)

Change VLAN/MAC information according to manual configuration

IPoE/IPoA Encapsulation conversion

Upstream packets (IPoE)

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?