

Public IPv4 over Access IPv6 network

draft-cui-software-host-4over6-06

draft-cui-software-dhcp-over-tunnel-01

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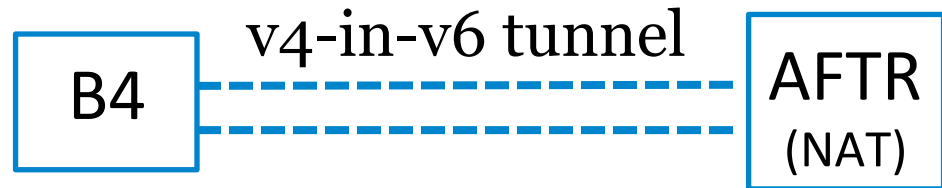
Juniper Networks

Comcast

Nominum

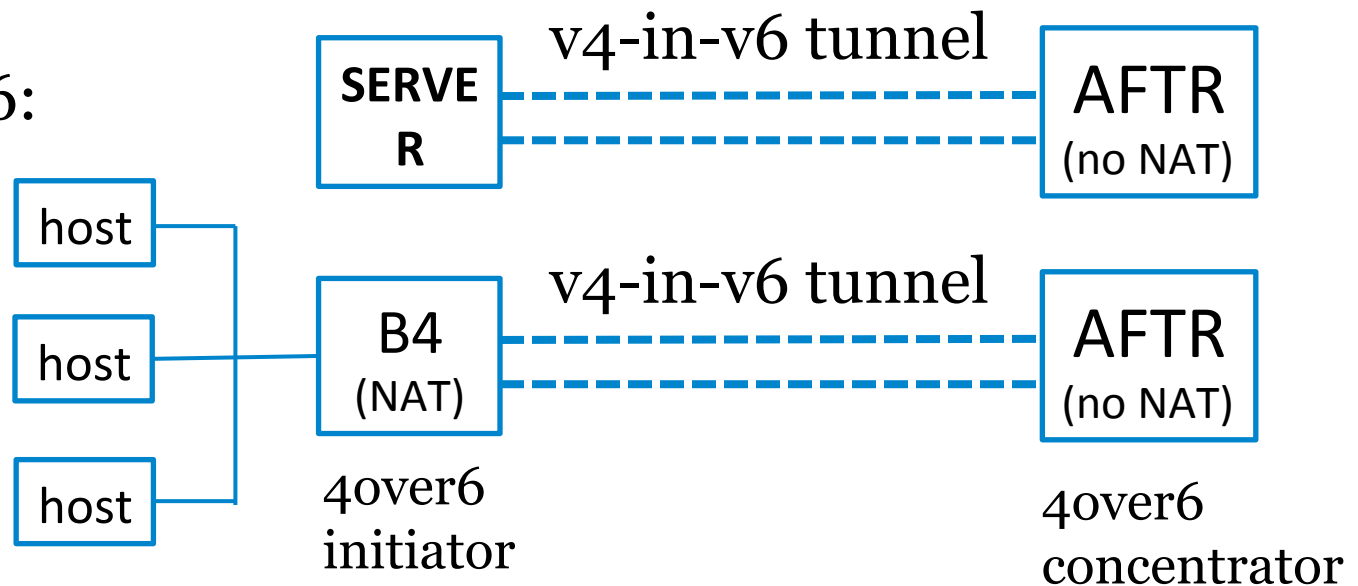
Public 4over6: basic idea

Dual-stack lite:



When allocating public address to B4...

Public 4over6:



Change logs

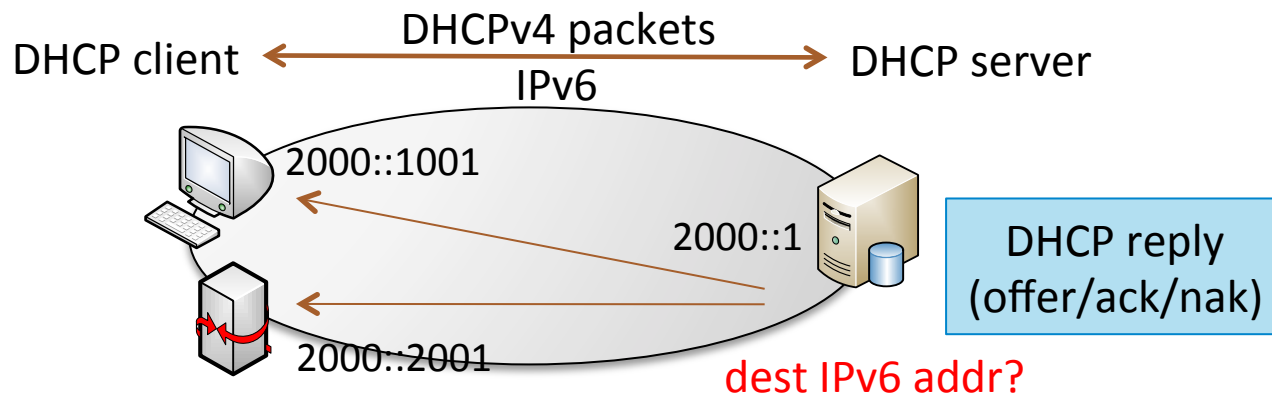
- -00 version in July 2010
- Both stateful and stateless solution in -01 -02 version
- WG asks us to accomplish the stateful solution first(-03, -04 version)
- changes since -04 version
 - Split DCHPv4 over IPv6 to a dedicated draft
 - Add use cases analysis
 - Remove the Non-NAT CPE case
 - Mapping maintenance method changes for HA/security concern

Documents

- DHCPv4 over IPv6 document
 - draft-cui-softwire-dhcp-over-tunnel-01*
 - IPv4 addr allocation from concentrator to initiators
 - Server-side DHCP Encapsulation
- Public 4over6 mechanism document
 - draft-cui-softwire-host-4over6-06*
 - Motivation and use cases
 - Encapsulation and Decapsulation mechanism
 - Concentrator discovery for initiator
 - Address mapping maintenance on concentrator

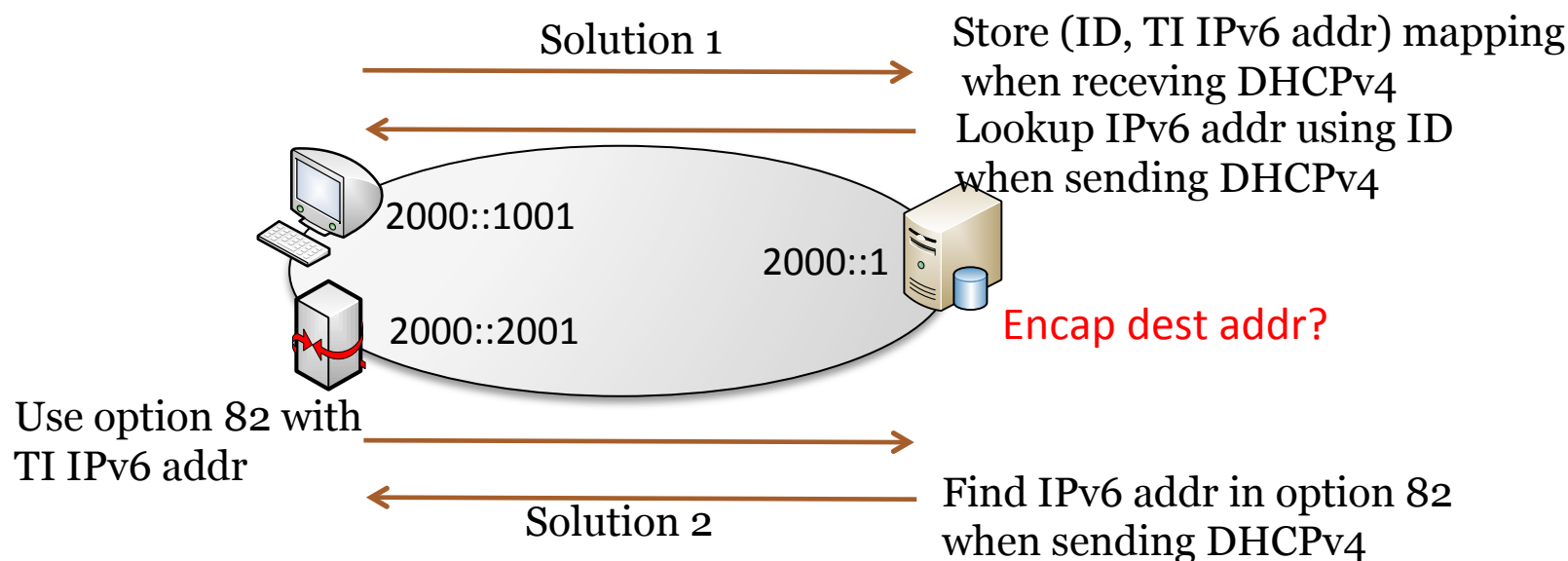
DHCPv4 over IPv6

- Apply DHCP to client=tunnel=server environment
 - All DHCPv4 packet interaction over IPv6
- Main issue
 - IPv6 Forwarding header of DHCP replies on server
 - Need correct IPv6 destination address



DHCPv4 over IPv6 solutions

- Solution 1: server keeps temporary (IPv6 address, **DHCP session ID**) mapping
 - Could be DHCP transaction-id, MAC address
- Solution 2: leveraging Relay Agent option(or new option?)
 - Client includes the TI IPv6 address in Option 82

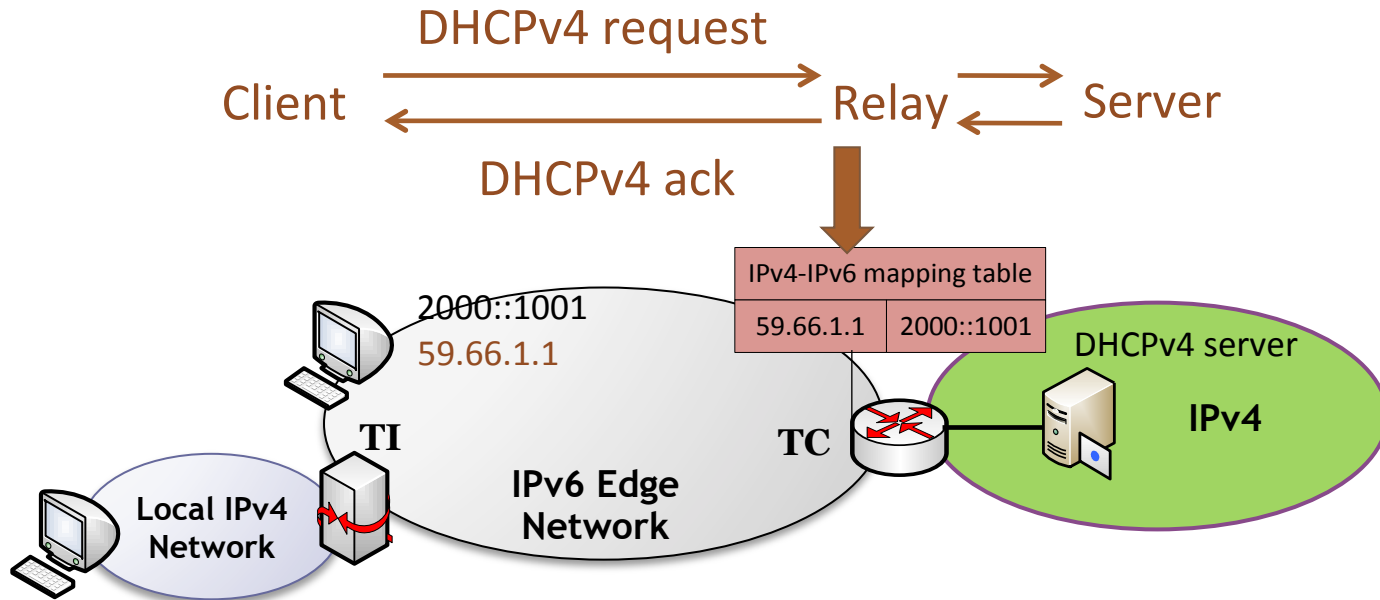


Encapsulation and decapsulation

- Encapsulation destination address
- Initiator: concentrator IPv6 address
 - Provided by DHCPv6 option
 - Same as [[draft-ietf-softwire-ds-lite-tunnel-option-10](#)]
- Concentrator: correct initiator IPv6 address
 - Maintain mapping of (allocated IPv4 address, initiator IPv6 address)
 - Lookup IPv6 encap destination address using IPv4 destination address

DHCP driven IPv4-IPv6 Mapping maintenance

- The mapping is maintained **along with DHCPv4 allocation**
- Concentrator as DHCP Relay or Server
- Install/renew the address mapping when relay/send out DHCPv4 Ack
- Used for destination address lookup when encapsulating



Prototype Implementation

- Concentrator and CPE initiator: Linux
- Host initiator: Linux, WIN XP and WIN 7
- Release before next IETF, demo available now
- Test deployment: CERNET, Tsinghua & BUPT Univ., ...



Document Status

- Presented in IETF78, 79, 80
- Received many comments from the meetings/ mailing list and revise accordingly.
- Working Group milestone
 - Jul 2011 Adopt DS-Lite without NAT document as a WG document
 - Jul 2011 Adopt DHCPv4 over tunnel document as a WG document
- Request for adoption as a WG document