

Tunnel End-point Discovery

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draft-palet-v6ops-tun-auto-disc-03.txt

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IPv6-in-IPv4 Tunnel End-point Discovery

- Is this something we have to provide?
 - A different discussion..
- Scope of the Discovery
 - Only in network of the ISP where the user attaches to
 - "Third party" discovery is out of scope
- Assumptions
 - Must work through a (non-upgraded) NAT/router
 - The user may have his own NAT/router box(es)
 - IP addresses may be private and/or dynamic
- Proposed solutions
 - Well-known unicast address ("anycast") for initial discovery
 - DNS (in forward or reverse tree)
 - DHCP and PPP options
 - SLP

Tunnel End-point Discovery

TEP Discovery - anycast

□ Main properties

- Well-known v4 unicast address ("anycast")
- Only for initial discovery of the "real" unicast address
- Typically would not be advertised in eBGP

□ Advantages

- Works through NATs, etc. very well
- Seems to work based on DNS root anycast and 6to4 anycast

□ Disadvantages

- ISPs need to be careful in filtering the prefix to prevent hijacks
 - Applies to those ISPs who provide the service
- Routing operations may be more difficult e.g. in enterprises than changing DNS

Tunnel End-point Discovery

TEP Discovery - forward DNS

☐ Main properties

- Use of DNS search path to discover `_v6tc.example.com`
- DNS search path learned through DHCP, etc.

☐ Advantages

- Adding the tunnel server requires just inserting an A record

☐ Disadvantages

- NAT boxes w/ DHCP pool have to pass through the search path
- Forward DNS search path and topology do not always map well
- If no search path, the queries might end up at the root servers

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TEP Discovery - reverse DNS

□ Main properties

- Define a new "TEP" record
- Prepopulate all the IP addresses of potential clients with the record
 - "1.2.3.4.in-addr.arpa. IN TEP v6tc.example.com"
- The clients would look up TEP record of their own IP address

□ Advantages

- Maps well to the topology

□ Disadvantages

- Assumes prepopulation of the whole IP address space
 - DNS operations pain unless the IP address space mgmt scripts can be modified?
- Assumes that all RFC1918 space is also prepopulated
 - and the box is not authoritative for RFC1918
- It takes a while to develop a new RR type.

Tunnel End-point Discovery

TEP Discovery - DHCP or PPP

- Main properties

- Define a new DHCPv4 or PPP option to carry the information

- Advantages

- DHCPv4 options are easily defined, "de facto" config method

- Disadvantages

- Does not work through non-upgraded NAT/router boxes
 - Sufficient number of users don't run DHCP or PPP
 - Would have to define multiple options
 - There has been resistance to new PPP options

Tunnel End-point Discovery

TEP Discovery - SLP

- Main properties

- Use Service Location Protocol

- Advantages

- Not really any, except the spec is out there...

- Disadvantages

- Multicast cannot be assumed, so a Directory Agent needed
 - Then, configuring the address of DA is a problem (e.g. DHCP)
 - Back to square one..

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TEP Discovery - Summary/Discussion

- ☐ If this must work through non-upgraded NAT boxes..
 - DHCP and PPP are non-starters
 - Forward DNS may have issues, are these serious enough?
- ☐ What's left?
 - Well-known unicast address
 - Reverse DNS prepopulation
 - Manual configuration.. (obviously)
- ☐ Where to go next?