Layer 2 Relay Agent & Relay Chaining in DHCPv4
DHC Working Group

draft-joshi-dhc-layer2-relay-agent-01
draft-kurapati-dhc-relay-chaining-dhcppv4-01.txt

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Layer 2 Relay Agent Draft

• Defines Layer 2 Relay Agent functionality and architecture

• Handling DHCPCLEASEQUERY in L2RA. Extension of RFC 4388 to Layer 2 Networks.

• Prevention of broadcasts between L3RA and L2RA
  – New sub-option ‘unicast-address’ added by L2RA. This is used by normal DHCP messages.
  – New option ‘relay-agent-hw-addr’ for LEASEQUERY messages. This is added by L2RA.
Layer 2 Relay Agent

- Adds option 82
- Does not populate ‘giaddr’
- Forwards reply based on option 82

- Adds “giaddr”
- Forwards reply based on “giaddr” [Destination IP in DHCP reply]
Extension of RFC 4388 to Layer 2 Access Networks

- Adds option 82
- Forwards reply based on option 82
- Extract MAC/IP/Lease time information from DHCP messages before forwarding
- Forwards reply based on "giaddr" [Destination IP in DHCP reply]
- Avoid MAC/IP Spoofing
- Avoid Unknown MAC Flooding

- This information is lost when the box reboots.
- L2 RA generates a DHCP leasequery message to fetch this information from DHCP server
Changes made from earlier presentations

- Based on the comments received at WG meeting and in the mailing lists following changes were made
  - Combined 2 drafts “draft-joshi-dhcp-lease-query-ext-02.txt” & “draft-decnodder-dhc-rai-unicast-01.txt”
  - Added more text to describe Layer 2 Relay Agent functionality
  - Addressed some of the comments received in the mailing list
Relay Chaining in DHCPv4

- A network may contain more than one Relay Agent
  - One example is Layer 2 Access Networks
- Every Relay Agent needs to add certain information to the DHCP messages so that the reply can be forwarded back to the client using the same path.
- Two new sub-options are created in Relay Agent Information option to store peer-address and peer-relay-agent-information option.
- These sub-options are used when Relay Agent needs to forward the reply to the DHCP clients.
Relay Chaining in DHCPv4

- Add Option 82
- Add ‘giaddr’

- Create peer-relay-agent sub-option
- Create peer-address sub-option
- Add Option 82
- Add ‘giaddr’

- Use peer-relay-agent option to populate option 82
- Use peer-address sub-option to populate giaddr
- Forward the reply to ‘giaddr’

- Iterate through peer-relay-agent options to get the deepest Option 82
- Send the reply to ‘giaddr’

<table>
<thead>
<tr>
<th>Sub-Opt</th>
<th>Len</th>
<th>‘giaddr’ from the message</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Sub-Opt</th>
<th>Len</th>
<th>Option 82 of previous RA</th>
</tr>
</thead>
<tbody>
<tr>
<td>82</td>
<td>Len</td>
<td>I1 I2 I3 In</td>
</tr>
</tbody>
</table>

DHCP Server

Service Provider’s IP Network

Layer 3 Relay Agent

Layer 3 Relay Agent

PC

STB

Local Loop

PC

STB
Next Step

- PoC implementation is done and verified.
- More review in WG mailing list.
- Working group item?