DHCP Relay on 6200 Switch

Kamal Takodra
Thimma Reddy Gadekal
Arunkumar M
Overview

- DHCP Relay was NOT available across 6200 platform prior to 10.06
- DHCP Relay uniformity with current CX portfolio
- 6200 DHCP Relay supports both IPv4 and IPv6
- IPV4 is default relay mechanism i.e. V6 switch on explicitly in global
- Introduction of this feature to this platform allows competitive & flexible architectures at the “edge”

Notable Considerations & Caveats
- V6 multicast helper not available 10.06(6200) under consideration CR
- Option 82 Snooping takes precedence over Option 82 Relay when coexisting per vlan.
- Remember Single default VRF /Global
- No ROP, L3 SVI Only
- No DHCP Server
- No Multicast Routing
Configuration Refresher
**Configuration Refresher**

**interface vlan 115**
- ip address 10.69.15.1/24
  - ip helper-address 10.69.253.3
  - ip helper-address 10.69.253.5
  - ip helper-address 10.6.25.3
  - ip ospf 1 area 0.0.0.0

**dhcpv6-relay**
- interface vlan 116
  - ipv6 address 2001:db8:116::1/64
  - ipv6 nd prefix default valid 4294967295 preferred 4294967295 no-autoconfig
  - ipv6 nd ra managed-config-flag
  - no ipv6 nd suppress-ra
  - ipv6 helper-address unicast 2001:db8:8400::1
  - ipv6 helper-address unicast 2001:db8:8402::2
  - ipv6 helper-address unicast 2001:db8:8401::3
  - ipv6 ospfv3 2 area 0.0.0.0

Enable relay for V4 under VLAN
Up to 8 IPv4 helpers per SVI
Enable V6 relay, off by default
DHCPV6 statefull config (RA & ND) under VLAN,
Client IPv6 and DNS address defined by DHCP Server
Up to 8 IPv6 helpers per SVI

**interface vlan 117**
- ip address 10.69.117.1/24
  - ipv6 address 2001:db8:117:6200::1/64

!Config omitted here
- ipv6 helper-address unicast 2001:db8:8400::1
- ipv6 helper-address unicast 2001:db8:8402::2
- ip helper-address 10.69.253.3
- ip helper-address 10.69.253.5

Up to 8 IPv4 helpers per SVI
Up to 8 IPv6 helpers per SVI
Feature/Solution Troubleshooting Refresher

Relay commands

show dhcp-relay
show ip helper-address [interface <interface-name>]
show dhcp-relay bootp-gateway [interface <interface-name>]
show tech dhcp-relay
diag-dump dhcp-relay basic
debug dhcprelay all

show dhcpv6-relay
show ipv6 helper-address [interface <interface-name>]
show tech dhcpv6-relay
diag-dump dhcpv6-relay basic
debug dhcpv6relay all
# Feature/Solution Troubleshooting Refresher

## show dhcp-relay

<table>
<thead>
<tr>
<th>Feature</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCP Relay Agent</td>
<td>enabled</td>
</tr>
<tr>
<td>DHCP Request Hop Count Increment</td>
<td>enabled</td>
</tr>
<tr>
<td>Option 82</td>
<td>disabled</td>
</tr>
<tr>
<td>Source-Interface</td>
<td>disabled</td>
</tr>
<tr>
<td>Response Validation</td>
<td>disabled</td>
</tr>
<tr>
<td>Option 82 Handle Policy</td>
<td>replace</td>
</tr>
<tr>
<td>Remote ID</td>
<td>mac</td>
</tr>
</tbody>
</table>

DHCP Relay Statistics:

<table>
<thead>
<tr>
<th></th>
<th>Valid Requests</th>
<th>Dropped Requests</th>
<th>Valid Responses</th>
<th>Dropped Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5489</td>
<td>1</td>
<td>5337</td>
<td>0</td>
</tr>
</tbody>
</table>

DHCP Relay Option 82 Statistics:

<table>
<thead>
<tr>
<th></th>
<th>Valid Requests</th>
<th>Dropped Requests</th>
<th>Valid Responses</th>
<th>Dropped Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>910</td>
<td>0</td>
<td>910</td>
<td>0</td>
</tr>
</tbody>
</table>

## show dhcpv6-relay

<table>
<thead>
<tr>
<th>Feature</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCPV6 Relay Agent</td>
<td>enabled</td>
</tr>
<tr>
<td>Option 79</td>
<td>disabled</td>
</tr>
</tbody>
</table>

"Quick view “relay enabled and options"
Feature/Solution Troubleshooting Refresher

### command: show ip helper-address interface vlan112

<table>
<thead>
<tr>
<th>IP Helper Addresses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface: vlan112</td>
</tr>
<tr>
<td>IP Helper Address</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>10.69.253.3</td>
</tr>
</tbody>
</table>

### command: show ipv6 helper-address interface vlan116

<table>
<thead>
<tr>
<th>Interface: vlan116</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Helper Address</td>
</tr>
<tr>
<td>Egress Port</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>3003::1</td>
</tr>
</tbody>
</table>

### command: show tech dhcp-relay

**DHCP Relay Statistics:**

<table>
<thead>
<tr>
<th>Valid Requests</th>
<th>Dropped Requests</th>
<th>Valid Responses</th>
<th>Dropped Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>5547</td>
<td>1</td>
<td>5395</td>
<td>0</td>
</tr>
</tbody>
</table>

**DHCP Relay Option 82 Statistics:**

<table>
<thead>
<tr>
<th>Valid Requests</th>
<th>Dropped Requests</th>
<th>Valid Responses</th>
<th>Dropped Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>910</td>
<td>0</td>
<td>910</td>
<td>0</td>
</tr>
</tbody>
</table>

### command: show tech dhcp

[Begin] Feature dhcp-relay

```bash
DHCP Relay Agent : enabled
DHCP Request Hop Count Increment : enabled
Option 82 : disabled
Source-Interface : disabled
Response Validation : disabled
Option 82 Handle Policy : replace
Remote ID : mac
```

### command: show ip helper

**IP Helper Addresses**

<table>
<thead>
<tr>
<th>Interface: vlan115</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Helper Address</td>
</tr>
<tr>
<td>VRF</td>
</tr>
<tr>
<td>10.69.253.3</td>
</tr>
</tbody>
</table>

show tech sub command “single view” of all

“Quick “configuration check
Feature/Solution Troubleshooting Refresher

diagnostics
diag-dump dhcp-relay basic

[Start] Feature dhcp-relay

Time : Sun Oct 11 10:24:07 2020

[Start] Daemon hpe-relay

DHCP Relay : 1
DHCP Relay hop-count-increment : 1
DHCP Relay Option82 : 0
DHCP Relay Option82 validate : 0
DHCP Relay Option82 policy : replace
DHCP Relay Option82 remote-id : mac
DHCP Relay Option82 Source Intf : Disable
Interface vlan115: 1
Selected Gateway Intf IP- 10.69.15.1
Intf IP-NODE’s IP- 10.69.15.1
Selected Mac [10:4f:58:f7:19:c0] & Virtual Mac [00:00:00:00:00:00]

Client Packet Statistics:

Output omitted

Interface vlan112: 1
Selected Gateway Intf IP- 10.69.112.1
Intf IP-NODE’s IP- 10.69.112.1
Selected Mac [10:4f:58:f7:19:c0] & Virtual Mac [00:00:00:00:00:00]

Server Packet Statistics:

client request dropped packets with extn option 82 = 0
client request valid packets with extn option 82 = 0
server request dropped packets with extn option 82 = 0
server request valid packets with extn option 82 = 0
Port 67 - 10.69.253.3,4
Source VRF:default, table_id:0

Diagnostic-dump captured for feature dhcp-relay
Feature/Solution Troubleshooting Refresher

diag-dump dhcpv6-relay basic


[Start] Daemon hpe-relay

DHCPv6 Relay : 1
DHCPv6 Relay Option79 : 0
vsx: Not Present
Interface vlan113: 0
Intf ifindex - 113 and kernel ifindex - 115
Client Packet Statistics:
Valid Dropped vsx_drops
0 0 0
Server Packet Statistics:
Valid Dropped To_Dsnoop
0 0 0

Interface vlan116: 1
Intf ifindex - 116 and kernel ifindex - 1213003::1,1,egress = (null)
Client Packet Statistics:
Valid Dropped vsx_drops
0 0 0
Server Packet Statistics:
Valid Dropped To_Dsnoop
0 0 0

Diagnostic dump captured for feature dhcpv6-relay
BLDG02-F1(config-if-vlan)
Feature/Solution Troubleshooting Refresher

debuge dhcpv6relay all

show debug buffer reverse

---

2020-10-08:17:31:55.911480|ndmd|LOG_ERR|MSTR|NDM|NDM_NBRTABLE|[nd_nbr_mgr_process_icmp6_rcv_na_event(2275)] |Port vlan116| Nbr not found for 3001::18

2020-10-08:17:31:55.911480|ndmd|LOG_ERR|MSTR|NDM|NDM_NBRTABLE|[nd_nbr_mgr_process_icmp6_rcv_na_event(2275)] |Port vlan116| Nbr not found for 3001::18

2020-10-08:17:31:55.911480|ndmd|LOG_ERR|MSTR|NDM|NDM_NBRTABLE|[nd_nbr_mgr_process_icmp6_rcv_na_event(2275)] |Port vlan116| Nbr not found for 3001::18

---

relay|LOG_DEBUG|MSTR|1|DHCPV6RELAY|DHCPV6RELAY|Packet sent to server 3003::1 from client fe80::5

relay|LOG_DEBUG|MSTR|1|DHCPV6RELAY|DHCPV6RELAY|Packet received on interface vlan116 from client fe80::507b:6066:9fa8:3cad.

relay|LOG_DEBUG|MSTR|1|DHCPV6RELAY|DHCPV6RELAY|Packet sent to server 3003::1 from client fe80::507b:6066:9fa8:3cad successfully.

relay|LOG_DEBUG|MSTR|1|DHCPV6RELAY|DHCPV6RELAY|Packet received on interface vlan116 from client fe80::507b:6066:9fa8:3cad.

relay|LOG_DEBUG|MSTR|1|DHCPV6RELAY|DHCPV6RELAY|Packet received on interface vlan116 from client fe80::507b:6066:9fa8:3cad.

---

07b:6066:9fa8:3cad successfully.

003::1 to client fe80::507b:6066:9fa8:3cad.

003::1 to client fe80::507b:6066:9fa8:3cad.

003::1 to client fe80::507b:6066:9fa8:3cad.

003::1 to client fe80::507b:6066:9fa8:3cad.
Show commands quick view
V6 client assignment on Win 10
V6 Wireshark trace and relay debug
V4 APs with Dsnoop with show & debug
Thank you