DHCP Relay

When the DHCP Relay service is enabled, and the switch sees a DHCP client request from an attached host, it inserts its own IP address into the request so that the DHCP server will know the subnet where the client is located. Then, the switch forwards the packet to a DHCP server (destination IP) on another network. When the server receives the DHCP request, it allocates a free IP address for the DHCP client from its defined scope for the DHCP client’s subnet, and sends a DHCP response back to the DHCP Relay agent (the switch). The switch then passes the DHCP response received from the server to the client.

DHCP relay between VLANs
Tested model & firmware version:
Switch model name:
DCS204 (AS7726-32X)
EPS202 (AS4630-54PE)
Edgecore SONiC version:
202006.3 ~ 202006.4
202012.0 ~ 202012.4
202111.0 ~ 202111.8
Topology:
DHCP_relay_between_VLANS.png

Pre-configuration:
Ethernet4 breakout to 4x10G.(refer Dynamic Port Breakout)

```
admin@sonic:~$ show interface status Ethernet4-7
  Interface    Lanes    Speed    MTU    FEC          Alias    Vlan    Oper
Admin            Type    Asym PFC    Oper Speed
-----------  -------  -------  -----  -----  -------------  ------  ------
-------  --------------  ----------  ------------
  Ethernet4        5      10G   9100   none  Eth2/1(Port2)   trunk      up
up  QSFP+ or later         N/A           10G
  Ethernet5        6      10G   9100   none  Eth2/2(Port2)   trunk      up
up  QSFP+ or later         N/A           10G
  Ethernet6        7      10G   9100   none  Eth2/3(Port2)  routed      up
up  QSFP+ or later         N/A           10G
  Ethernet7        8      10G   9100   none  Eth2/4(Port2)  routed    down
up  QSFP+ or later         N/A           10G
```

VLAN configuration is as topology.(refer to VLAN & Inter-VLAN Routing)

```
admin@sonic:~$ show vlan brief
+-----------+--------------+-----------+-----------+----------+--------------
+----------------------------+
|   VLAN ID | IP Address   | Ports     | Port      | Proxy    | DHCP Helper   |
DHCP Relay Configuration   |
|           |              |           | Tagging   | ARP      | Address       |
|
+===========+==============+===========+===========+==========+===============+=
============================+
|        10 |              | Ethernet4 | untagged  | disabled |               |
Source Interface:          |
|           |              |           |           |          |               |
Link Selection:            |
|           |              |           |           |          |               |
Server Vrf:                |
|           |              |           |           |          |               |
Server ID Override:        |
+-----------+--------------+-----------+-----------+----------+--------------
+----------------------------+
|        20 |              | Ethernet5 | untagged  | disabled |               |
Source Interface:          |
|           |              |           |           |          |               |
Link Selection:            |
|           |              |           |           |          |               |
Server Vrf:                |
```

```
|           |              |           |           |          |               |
Server ID Override:         |
+-----------+--------------+-----------+-----------+----------+---------------
+----------------------------+
IP binding is as topology.(refer to Management and front port IPv4/IPv6 Address)
admin@sonic:~$ show ip interfaces
Interface    Master    IPv4 address/mask    Admin/Oper    BGP Neighbor
Neighbor IP
-----------  --------  -------------------  ------------  --------------
-------------
Vlan10                 192.168.10.1/24      up/up         N/A             N/A
Vlan20                 192.168.20.1/24      up/up         N/A             N/A
docker0                240.127.1.1/24       up/down       N/A             N/A
eth0                   192.168.254.1/24     up/up         N/A             N/A
lo                     127.0.0.1/16         up/up         N/A             N/A
Expect result:
DHCP client can get IP via DHCP relay from remote DHCP server.

Procedure:
Step 1. Create a JSON file for modify DEVICE_METADATA.type. (Since restriction,
it needs to change the type)

admin@sonic:~$ cat tor.json
{
    "DEVICE_METADATA": {
        "localhost": {
            "type": "ToRRouter"
        }
    }
}
Note: This step is only for the branch 202012 version, other branch versions
please start to Step 4.

Step 2. Apply the tor.json to running configuration.

admin@sonic:~$ sudo config load tor.json -y
Running command: /usr/local/bin/sonic-cfggen -j tor.json --write-to-db
Step 3. Save to startup configuration and reboot device to apply.

admin@sonic:~$ sudo config save -y
Running command: /usr/local/bin/sonic-cfggen -d --print-data >
/etc/sonic/config_db.json
admin@sonic:~$ sudo reboot
Step 4. Enable DHCP relay on Vlan10.

admin@sonic:~$ sudo config vlan dhcp_relay add 10 192.168.20.100
Added DHCP relay destination addresses ['192.168.20.100'] to Vlan10
Restarting DHCP relay service...
Step 5. Check switch can reach to DHCP server and the arp table has been
correctly learned.

admin@sonic:~$ show vlan brief
+-----------+-----------------+-----------+-----------+----------
+---------------+----------------------------+
|   VLAN ID | IP Address      | Ports     | Port      | Proxy    | DHCP Helper
| DHCP Relay Configuration   |
|           |                 |           | Tagging   | ARP      | Address
|                            |
+===========+=================+===========+===========+==========+=============
==+============================+
|        10 | 192.168.10.1/24 | Ethernet4 | untagged  | disabled |
192.168.20.100 | Source Interface:          |
|           |                 |           |           |          |
| Link Selection:            |
```

```
|           |                 |           |           |          |
| Server Vrf:               |
|           |                 |           |           |          |
| Server ID Override:       |
+-----------+-----------------+-----------+-----------+----------
+---------------+---------------------------+
|        20 | 192.168.20.1/24 | Ethernet5 | untagged  | disabled |
| Source Interface:         |
|           |                 |           |           |          |
| Link Selection:           |
|           |                 |           |           |          |
| Server Vrf:               |
|           |                 |           |           |          |
| Server ID Override:       |
+-----------+-----------------+-----------+-----------+----------
+---------------+---------------------------+
admin@sonic:~$ show arp
Address          MacAddress         Iface      Vlan
---------------  -----------------  ---------  ------
192.168.20.100   3c:fd:fe:ed:bf:bd  Ethernet5  20
Total number of entries 1
The source interface of DHCP relay agent uses the LOOPBACK interface.
Tested model & firmware version:
Switch model name:
DCS204 (AS7726-32X)
Edgecore SONiC version:
202012.2 ~ 202012.4
202111.0 ~ 202111.8
Topology:
image2022-1-19_14-54-53.png

Pre-configuration:
Ethernet4 breakout to 4x10G.(refer Dynamic Port Breakout)
admin@sonic:~$ show interface status Ethernet4-7
  Interface    Lanes    Speed    MTU    FEC          Alias    Vlan    Oper
Admin            Type    Asym PFC    Oper Speed
-----------  -------  -------  -----  -----  -------------  ------  ------
-------  -------------  ----------  ------------
  Ethernet4        5      10G   9100   none  Eth2/1(Port2)   trunk      up
up  QSFP+ or later         N/A           10G
  Ethernet5        6      10G   9100   none  Eth2/2(Port2)   trunk      up
up  QSFP+ or later         N/A           10G
  Ethernet6        7      10G   9100   none  Eth2/3(Port2)  routed      up
up  QSFP+ or later         N/A           10G
  Ethernet7        8      10G   9100   none  Eth2/4(Port2)  routed    down
up  QSFP+ or later         N/A           10G
VLAN configuration is as topology.(refer to VLAN & Inter-VLAN Routing)
admin@sonic:~$ show vlan brief
+-----------+--------------+-----------+-----------+----------+--------------
+---------------------------+
|   VLAN ID | IP Address   | Ports     | Port      | Proxy    | DHCP Helper   |
DHCP Relay Configuration   |
|           |              |           | Tagging   | ARP      | Address       |
|
+===========+==============+===========+===========+==========+===============+=
===========================+
|        10 |              | Ethernet4 | untagged  | disabled |               |
Source Interface:          |
|           |              |           |           |          |               |
Link Selection:            |
|           |              |           |           |          |               |
Server Vrf:                |
|           |              |           |           |          |               |
Server ID Override:        |
```

```
+-----------+--------------+-----------+-----------+----------+--------------
+----------------------------+
|        20 |              | Ethernet5 | untagged  | disabled |              |
Source Interface:          |
|           |              |           |           |          |              |
Link Selection:            |
|           |              |           |           |          |              |
Server Vrf:                |
|           |              |           |           |          |              |
Server ID Override:        |
+-----------+--------------+-----------+-----------+----------+--------------
+----------------------------+
IP binding is as topology.(refer to Management and front port IPv4/IPv6 Address)
admin@sonic:~$ show ip interfaces
Interface    Master    IPv4 address/mask    Admin/Oper    BGP Neighbor
Neighbor IP
-----------  --------  -------------------  ------------  --------------
-------------
Loopback0              1.1.1.1/32           up/up         N/A             N/A
Vlan10                 192.168.10.1/24      up/up         N/A             N/A
Vlan20                 192.168.20.1/24      up/up         N/A             N/A
docker0                240.127.1.1/24       up/down       N/A             N/A
eth0                   192.168.254.1/24     up/up         N/A             N/A
lo                     127.0.0.1/16         up/up         N/A             N/A
Expect result:
DHCP client will get IP from DHCP server. DHCP server will get DHCP request from
DHCP client which source IP is Loopback interface IP.

Procedure:
Step 1. Modify the type of DEVICE_METADATA to "ToRRouter" in
/etc/sonic/config_db.json.

admin@sonic:~$ sudo sed -i 's/LeafRouter/ToRRouter/g' /etc/sonic/config_db.json
Note: This step is only for the branch 202012 version, other branch versions
please start to Step 3.

Step 2. Reboot device to apply the configuration.

admin@sonic:~$ sudo reboot
Step 3. Enable DHCP relay on VLAN10

admin@sonic:~$ sudo config vlan dhcp_relay add 10 192.168.20.100
Added DHCP relay destination address 192.168.20.100 to Vlan10
Restarting DHCP relay service...
Step 4. Modify the src_intf to change the source IP of DHCP relay agent.

admin@sonic:~$ sudo config vlan dhcp_relay src_intf add 10 Loopback0
Added DHCP relay source interface Loopback0 for Vlan10
Restarting DHCP relay service...
Step 5. Check switch can reach to DHCP server and the arp table has been
correctly learned.

admin@sonic:~$ show vlan brief
+-----------+----------------+-----------+-----------+----------
+---------------+----------------------------+
|   VLAN ID | IP Address     | Ports     | Port      | Proxy    | DHCP Helper
| DHCP Relay Configuration    |
|           |                |           | Tagging   | ARP      | Address
|                            |
+===========+================+===========+===========+==========+=============
==+============================+
|        10 | 192.168.10.1/24 | Ethernet4 | untagged  | disabled |
192.168.20.100 | Source Interface: Loopback0 |
|           |                |           |           |          |
```

```
| Link Selection:             |
|           |                 |           |           |          |
| Server Vrf:                 |
|           |                 |           |           |          |
| Server ID Override:         |
+-----------+-----------------+-----------+-----------+----------
+---------------+-----------------------------+
|        20 | 192.168.20.1/24 | Ethernet5 | untagged  | disabled |
| Source Interface:           |
|           |                 |           |           |          |
| Link Selection:             |
|           |                 |           |           |          |
| Server Vrf:                 |
|           |                 |           |           |          |
| Server ID Override:         |
+-----------+-----------------+-----------+-----------+----------
+---------------+-----------------------------+
admin@sonic:~$ show arp
Address          MacAddress         Iface      Vlan
---------------  -----------------  ---------  ------
192.168.20.100   3c:fd:fe:ed:bf:bd  Ethernet5  20
Total number of entries 1
Result:
As expect result.

Packet capture
image2022-1-19_15-27-18.png



DHCP relay on a single VRF
Tested model & firmware version:
Switch model name:
DCS203 (AS7326-56X)
Edgecore SONiC version:
202012.2 ~ 202012.4
202111.0 ~ 202111.8
Topology:
mceclip0.png

Pre-configuration:
VLAN configuration is as topology.(refer to VLAN & Inter-VLAN Routing)

admin@sonic:~$ show vlan brief
+-----------+-----------------+-----------+-----------+----------
+---------------+-----------------------------+
|   VLAN ID | IP Address      | Ports     | Port      | Proxy    | DHCP Helper
| DHCP Relay Configuration    |
|           |                 |           | Tagging   | ARP      | Address
|                             |
+===========+=================+===========+===========+==========+==============
==+=============================+
|        10 | 192.168.10.1/24 | Ethernet1 | untagged  | disabled |
| Source Interface:           |
|           |                 |           |           |          |
| Link Selection:             |
|           |                 |           |           |          |
| Server Vrf:                 |
|           |                 |           |           |          |
| Server ID Override:         |
+-----------+-----------------+-----------+-----------+----------
+---------------+-----------------------------+
|        20 | 192.168.20.1/24 | Ethernet0 | untagged  | disabled |
| Source Interface:           |
```

```
|           |                 |           |           |          |
| Link Selection:             |
|           |                 |           |           |          |
| Server Vrf:                 |
|           |                 |           |           |          |
| Server ID Override:         |
+-----------+-----------------+-----------+-----------+----------
+----------------+----------------------------+
```

Binding the Interface to VRF. (refer to VRF(Virtual routing and forwarding))

```
admin@sonic:~$ show vrf
VRF    Interfaces
-----  ------------
Vrf1   Vlan10
       Vlan20
```

IP binding is as topology.(refer to Management and front port IPv4/IPv6 Address)

```
admin@sonic:~$ show ip interfaces
Interface    Master    IPv4 address/mask    Admin/Oper    BGP Neighbor
Neighbor IP
-----------  --------  -------------------  ------------  --------------
-------------
Vlan10       Vrf1      192.168.10.1/24      up/up         N/A             N/A
Vlan20       Vrf1      192.168.20.1/24      up/up         N/A             N/A
docker0                240.127.1.1/24       up/down       N/A             N/A
eth0                   188.188.9.11/16      up/up         N/A             N/A
lo                     127.0.0.1/16         up/up         N/A             N/A
```

Expect result:
DHCP client can get IP via DHCP relay from remote DHCP server.

Procedure:
Step 1. Enable DHCP relay on VLAN10

```
admin@sonic:~$ sudo config vlan dhcp_relay add 10 192.168.20.100
Added DHCP relay destination addresses ['192.168.20.100'] to Vlan10
Restarting DHCP relay service...
```

Step 2. Check switch can reach to DHCP server and the arp table has been correctly learned.

```
admin@sonic:~$ show vlan brief
+-----------+-----------------+-----------+-----------+----------
+----------------+----------------------------+
|   VLAN ID | IP Address      | Ports     | Port      | Proxy    | DHCP Helper
| DHCP Relay Configuration   |
|           |                 |           | Tagging   | ARP      | Address
|                            |
+===========+=================+===========+===========+==========+=============
==+============================+
|        10 | 192.168.10.1/24 | Ethernet1 | untagged  | disabled |
192.168.20.100 | Source Interface:          |
|           |                 |           |           |          |
| Link Selection:            |
|           |                 |           |           |          |
| Server Vrf:                |
|           |                 |           |           |          |
| Server ID Override:        |
+-----------+-----------------+-----------+-----------+----------
+----------------+----------------------------+
|        20 | 192.168.20.1/24 | Ethernet0 | untagged  | disabled |
| Source Interface:          |
|           |                 |           |           |          |
| Link Selection:            |
```

```
|           |                  |           |           |          |
| Server Vrf:                |
|           |                  |           |           |          |
| Server ID Override:        |
+-----------+------------------+-----------+-----------+----------
+----------------+----------------------------+
admin@sonic:~$ show arp
Address          MacAddress         Iface      Vlan
---------------  -----------------  ---------  ------
192.168.20.100   3c:fd:fe:ed:bf:bd  Ethernet0  20
Total number of entries 1
```

DHCP relay over different VRFs
Tested model & firmware version:
Switch model name:
DCS203 (AS7326-56X)
Edgecore SONiC version:
202012.2 ~ 202012.4
202111.0 ~ 202111.8
Topology:
mceclip1.png

Pre-configuration:
VLAN configuration is as topology. (refer to VLAN & Inter-VLAN Routing)

```
admin@sonic:~$ show vlan brief
+-----------+-----------------+-----------+-----------+----------
+--------------+----------------------------+
|   VLAN ID | IP Address      | Ports     | Port      | Proxy    | DHCP Helper
| DHCP Relay Configuration   |
|           |                 |           | Tagging   | ARP      | Address
|                            |
+===========+=================+===========+===========+==========+=============
=+============================+
|        10 | 192.168.10.1/24 | Ethernet1 | untagged  | disabled |
| Source Interface:          |
|           |                 |           |           |          |
| Link Selection:            |
|           |                 |           |           |          |
| Server Vrf:                |
|           |                 |           |           |          |
| Server ID Override:        |
+-----------+-----------------+-----------+-----------+----------
+--------------+----------------------------+
|        20 | 192.168.20.1/24 | Ethernet0 | untagged  | disabled |
| Source Interface:          |
|           |                 |           |           |          |
| Link Selection:            |
|           |                 |           |           |          |
| Server Vrf:                |
|           |                 |           |           |          |
| Server ID Override:        |
+-----------+-----------------+-----------+-----------+----------
+--------------+----------------------------+
```

Binding the Interface to VRF. (refer to VRF(Virtual routing and forwarding))

```
admin@sonic:~$ show vrf
VRF    Interfaces
-----  ------------
Vrf1   Vlan10
Vrf2   Vlan20
```

IP binding is as topology.(refer to Management and front port IPv4/IPv6 Address)

```
admin@sonic:~$ show ip interfaces
Interface    Master    IPv4 address/mask    Admin/Oper    BGP Neighbor
Neighbor IP
-----------  --------  -------------------  ------------  -------------
-------------
Vlan10       Vrf1      192.168.10.1/24      up/up         N/A             N/A
Vlan20       Vrf2      192.168.20.1/24      up/up         N/A             N/A
docker0                240.127.1.1/24       up/down       N/A             N/A
eth0                   188.188.36.202/16    up/up         N/A             N/A
lo                     127.0.0.1/16         up/up         N/A             N/A
```

Procedure:

Step 1. Enable DHCP relay on VLAN10

```
admin@sonic:~$ sudo config vlan dhcp_relay add 10 192.168.20.100
Added DHCP relay destination addresses ['192.168.20.100'] to Vlan10
Restarting DHCP relay service...
```

Step 2. add VRF route leaking. (The routing from the Server's VRF needs to leak to the Client's VRF.)

```
admin@sonic:~$ vtysh

Hello, this is FRRouting (version 8.1).
Copyright 1996-2005 Kunihiro Ishiguro, et al.

sonic#
sonic# configure
sonic(config)# vrf Vrf1
sonic(config-vrf)# ip route 192.168.20.0/24 Vlan20 nexthop-vrf Vrf2

admin@sonic:~$ show ip route vrf all
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
        - selected route, * - FIB route, q - queued route, r - rejected route

VRF Vrf1:
C*192.168.10.0/24 is directly connected, Vlan10, 00:16:59
K*192.168.10.1/32 [0/0] is directly connected, Vlan10, 00:16:59
S*192.168.20.0/24 [1/0] is directly connected, Vlan20,(vrf Vrf2, Vlan20,
00:00:13

VRF Vrf2:
C*192.168.20.0/24 is directly connected, Vlan20, 00:03:08
K*192.168.20.1/32 [0/0] is directly connected, Vlan20, 00:03:08

VRF default:
K*0.0.0.0/0 [0/202] via 188.188.1.1, eth0, 02:45:13
C*188.188.0.0/16 is directly connected, eth0, 02:45:13
```

Step 3. Modify the src_intf to change the source IP of DHCP relay agent.

```
admin@sonic:~$ sudo config vlan dhcp_relay src_intf add 10 Vlan20
Added DHCP relay source interface Vlan20 for Vlan10
Restarting DHCP relay service...
```

Note: The DHCP server will determine the destination IP of the "DHCP Offer" based on the Relay agent IP address field(IP address of the client-interface) of "DHCP discover" packet. But socket cannot receive "DHCP Offer" from different VRF. Therefore, need to change the Relay agent IP address that designates the source interface in the Server's VRF, and enable the link-selection sub-option.

Step 4. Enable DHCP Link Selection.

```
admin@sonic:~$ sudo config vlan dhcp_relay link_selection add 10
Enable DHCP relay link selection for Vlan10
Restarting DHCP relay service...
Note: The link-selection sub-option of the Agent information option for the DHCP
is used by any DHCP relay agent that desires to specify a subnet/link for a DHCP
client request that it is relaying but needs the subnet/link specification to be
different from the IP address the DHCP server should use when communicating with
the relay agent. Therefore, the link-selection sub-option specifies an IP
address that determines a subnet on which the DHCP client is located, and the
relay agent IP address field can be used to communicate with the relay agent.
```

Step 5. Check switch can reach to DHCP server and the arp table has been correctly learned.

```
admin@sonic:~$ show vlan brief
+-----------+-----------------+-----------+-----------+----------
+----------------+----------------------------+
|   VLAN ID | IP Address      | Ports     | Port      | Proxy    | DHCP Helper
| DHCP Relay Configuration   |
|           |                 |           | Tagging   | ARP      | Address
|                            |
+===========+=================+===========+===========+==========+==============
==+============================+
|        10 | 192.168.10.1/24 | Ethernet1 | untagged  | disabled |
192.168.20.100 | Source Interface: Vlan20   |
|           |                 |           |           |          |
| Link Selection:enabled     |
|           |                 |           |           |          |
| Server Vrf:                |
|           |                 |           |           |          |
| Server ID Override:        |
+-----------+-----------------+-----------+-----------+----------
+----------------+----------------------------+
|        20 | 192.168.20.1/24 | Ethernet0 | untagged  | disabled |
| Source Interface:          |
|           |                 |           |           |          |
| Link Selection:            |
|           |                 |           |           |          |
| Server Vrf:                |
|           |                 |           |           |          |
| Server ID Override:        |
+-----------+-----------------+-----------+-----------+----------
+----------------+----------------------------+
admin@sonic:~$ show arp
Address          MacAddress         Iface      Vlan
---------------  -----------------  ---------  ------
192.168.20.100   3c:fd:fe:ed:bf:bd  Ethernet0  20
Total number of entries 1
Result:
```

mceclip2.png

After 202111.7, there's a new command used to specify the DHCP relay server VRF on a VLAN.

```
admin@sonic:~$ sudo config vlan dhcp_relay server_vrf add 10 Vrf2
```

```
Added DHCP relay server vrf Vrf2 for Vlan10
Restarting DHCP relay service...
With it, the route leaking(in Step 2) will no longer needed to be set.



admin@sonic:~$ show vlan brief
+-----------+-----------------+-----------+-----------+----------
+---------------+---------------------------+
|   VLAN ID | IP Address      | Ports     | Port      | Proxy    | DHCP Helper
| DHCP Relay Configuration   |
|           |                 |           | Tagging   | ARP      | Address
|                           |
+===========+=================+===========+===========+==========+==============
==+===========================+
|        10 | 192.168.10.1/24 | Ethernet1 | untagged  | disabled |
192.168.20.100 | Source Interface: Vlan20   |
|           |                 |           |           |          |
| Link Selection:enabled     |
|           |                 |           |           |          |
| Server Vrf: Vrf2           |
|           |                 |           |           |          |
| Server ID Override:        |
+-----------+-----------------+-----------+-----------+----------
+---------------+---------------------------+
|        20 | 192.168.20.1/24 | Ethernet0 | untagged  | disabled |
| Source Interface:          |
|           |                 |           |           |          |
| Link Selection:            |
|           |                 |           |           |          |
| Server Vrf:                |
|           |                 |           |           |          |
| Server ID Override:        |
+-----------+-----------------+-----------+-----------+----------
+---------------+---------------------------+


DHCP relay on SAG
Tested model & firmware version:
Switch model name:
EPS202 (AS4630-54PE)
Edgecore SONiC version:
 202111.3~202111.8
Topology:



Pre-configuration:
VLAN configuration is as topology. (refer to VLAN & Inter-VLAN Routing)

admin@sonic:~$ show vlan brief
+-----------+-----------------+-----------+-----------+----------
+---------------+---------------------------+
|   VLAN ID | IP Address      | Ports     | Port      | Proxy    | DHCP Helper
| DHCP Relay Configuration   |
|           |                 |           | Tagging   | ARP      | Address
|                           |
+===========+=================+===========+===========+==========+==============
=+===========================+
|        10 |                 | Ethernet4 | untagged  | disabled |
| Source Interface:          |
|           |                 |           |           |          |
| Link Selection:            |
```

```
|           |                  |           |           |          |
| Server Vrf:                |
|           |                  |           |           |          |
| Server ID Override:        |
+-----------+------------------+-----------+-----------+----------
+---------------+----------------------------+
|        20 | 192.168.20.1/24 | Ethernet0 | untagged  | disabled |
| Source Interface:          |
|           |                  |           |           |          |
| Link Selection:            |
|           |                  |           |           |          |
| Server Vrf:                |
|           |                  |           |           |          |
| Server ID Override:        |
+-----------+------------------+-----------+-----------+----------
+---------------+----------------------------+
```

SAG configuration is as topology. (refer to SAG(static anycast gateway) step8)

```
admin@sonic:~$ show sag
Static Anycast Gateway Information

MacAddress         IPv4    IPv6
-----------------  ------  ------
00:11:22:33:44:55  enable  N/A
```

IP binding is as topology.(refer to Management and front port IPv4/IPv6 Address)

```
admin@sonic:~$ show ip int
Interface    Master    IPv4 address/mask    Admin/Oper    BGP Neighbor
Neighbor IP
-----------  --------  -------------------  ------------  --------------
-------------
Sag10                  192.168.10.254/24    up/up         N/A             N/A
Vlan20                 192.168.20.1/24      up/up         N/A             N/A
docker0                240.127.1.1/24       up/down       N/A             N/A
eth0                   188.188.9.11/16      up/up         N/A             N/A
lo                     127.0.0.1/16         up/up         N/A             N/A
```

Procedure:

Step 1. Enable DHCP relay on SAG10

```
admin@sonic:~$ sudo config sag dhcp_relay add 10 192.168.20.100
Added DHCP relay destination addresses ['192.168.20.1'] to Sag10
Restarting DHCP relay service...
```

Step 2. Check sag ip

```
admin@sonic:~$ show sag ip
Vlan Interface Name    IPv4 address/mask    DHCP Helper    DHCP Source    DHCP
Link    DHCP Hepler    DHCP Server ID
                                            Address        Interface
Selection    Vrf            Override
--------------------  -------------------  -------------  -------------
-----------  -------------  ----------------
Vlan10                 192.168.10.254/24    192.168.20.1
```

Step 3. Check switch can reach to DHCP server and the arp table has been correctly learned.

```
admin@sonic:~$ show vlan brief
+-----------+-----------------+-----------+-----------+----------
+--------------+----------------------------+
|   VLAN ID | IP Address      | Ports     | Port      | Proxy    | DHCP Helper
| DHCP Relay Configuration   |
```

```
|           |                  |           | Tagging   | ARP      | Address
|                              |
+===========+==================+===========+===========+==========+==============
=+============================+
|        10 |                  | Ethernet4 | untagged  | disabled |
| Source Interface:            |
|           |                  |           |           |          |
| Link Selection:              |
|           |                  |           |           |          |
| Server Vrf:                  |
|           |                  |           |           |          |
| Server ID Override:          |
+-----------+------------------+-----------+-----------+----------
+---------------+----------------------------+
|        20 | 192.168.20.1/24  | Ethernet0 | untagged  | disabled |
| Source Interface:            |
|           |                  |           |           |          |
| Link Selection:              |
|           |                  |           |           |          |
| Server Vrf:                  |
|           |                  |           |           |          |
| Server ID Override:          |
+-----------+------------------+-----------+-----------+----------
+---------------+----------------------------+
admin@sonic:~$ show arp
Address          MacAddress         Iface      Vlan
---------------  -----------------  ---------  ------
192.168.20.100   3c:fd:fe:ed:bf:bd  Ethernet0  20
Total number of entries 1
```

Result: