Passive Client

Information About Passive Clients

Passive Clients are wireless devices, such as printers and devices configured using a static IP address. Such clients do no transmit any IP information after associating to an AP. That is why, the controller does not learn their IP address unless they perform the DHCP process.

In the controller, the clients just show up in the **Learn IP** state and get timed out because of the DHCP policy-timeout.

The Passive Client feature can be enabled on a per WLAN basis. Enabling this feature will change a few default behaviors in order to better accommodate passive clients. These changes include :

- No client will ever timeout in the IP_LEARN phase. The controller will keep on waiting to learn their IP address. Note that the idle timeout remains active and will delete the client entry after the timeout period expiry, if the client remains silent all along.
- ARP coming from the wired side is broadcasted to all the APs, if the controller does not know the client IP address, to ensure that it reaches the passive client. After this, the controller learns the client IP from the ARP response.

Note In order to save air time, the controller transforms the ARP broadcast coming from the wired side or from other wireless clients and unicasts them to the wireless client it owns . This is only possible after the controller has learned the MAC-IP binding of its wireless client.

When the controller enables ARP broadcast, the controller does not transform the ARP broadcasts into unicasts but only forwards the broadcast, thereby wasting air time for other clients (with a frame that is not acknowledgeable and therefore less reliable). This pushes the passive client to respond to the ARP request and therefore every other client benefits from learning the MAC-IP binding of the wireless client.

Note Passive client feature is not supported on FlexConnect local switching mode.

Enabling Passive Client on WLAN Policy Profile (GUI)

Procedure

Step 1 Choose **Configuration** > **Tags & Profiles** > **Policy** page, click **Add** to open the **Add Policy Profile** page.

Step 2 In the **General** tab, use the slider to enable **Passive Client**.

Step 3 Click **Save & Apply to Device**.

Enabling Passive Client on WLAN Policy Profile (CLI)

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 2	**wireless profile policy** *policy-profile* **Example:** `Device(config)# wireless profile policy rr-xyz-policy-1`	Configures WLAN policy profile and enters wireless policy configuration mode.
Step 3	**[no] passive-client** **Example:** `Device(config-wireless-policy)# [no] passive-client`	Enables Passive Client.

	Command or Action	Purpose
Step 4	**end** **Example:** `Device(config-wireless-policy)# end`	Returns to privileged EXEC mode.

Enabling ARP Broadcast on VLAN (GUI)

Procedure

Step 1 Choose **Configuration** > **Layer2** > **VLAN** page, click **VLAN** tab.

Step 2 Click **Add** to view the **Create VLAN** window.

Step 3 Use the slider to enable **ARP Broadcast**.

Step 4 Click **Save & Apply to Device**.

Enabling ARP Broadcast on VLAN (CLI)

Note ARP Broadcast feature is not supported on VLAN groups.

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 2	**vlan configuration** *vlan-id* **Example:** `Device(config)# vlan configuration 1`	Configures a VLAN or a collection of VLANs and enters VLAN configuration mode.
Step 3	**[no] arp broadcast** **Example:** `Device(config-vlan)# [no] arp broadcast`	Enables ARP broadcast on VLAN.
Step 4	**end** **Example:** `Device(config-vlan)# end`	Returns to privileged EXEC mode. Alternatively, you can also press **Ctrl-Z** to exit global configuration mode.

Configuring Passive Client in Fabric Deployment

You need to enable the following for passive client feature to work:

- ARP broadcast on VLANs
- LISP multicast. For information on LISP multicast, see:

  https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/iproute_lisp/configuration/xe-3s/irl-xe-3s-book/irl-lisp-multicast.html

For information on LISP (Locator ID Separation Protocol), see:

https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/iproute_lisp/configuration/xe-3s/irl-xe-3s-book/irl-cfg-lisp.html

Enabling Broadcast Underlay on VLAN

Note You can perform the following configuration tasks from Fabric Edge Node only and not from your controller.

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `FabricEdge# configure terminal`	Enters global configuration mode.
Step 2	**router lisp** **Example:** `FabricEdge(config)# router lisp`	Enters LISP configuration mode.
Step 3	**instance-id** *instance* **Example:** `FabricEdge(config-router-lisp)# instance-id 3`	Creates a LISP EID instance to group multiple services. Configurations under this instance-id are applicable to all services underneath it.
Step 4	**service ipv4** **Example:** `FabricEdge(config-router-lisp-instance)# service ipv4`	Enables Layer 3 network services for the IPv4 address family and enters the service submode.
Step 5	**database-mapping** *eid* **locator-set** *RLOC name* **Example:**	Configures EID to RLOC mapping relationship.

	Command or Action	Purpose
	`FabricEdge(config-router-lisp-instance-dynamic-eid)# database-mapping 66.66.66.64/32 locator-set rloc1`	
Step 6	**map-cache** *destination-eid* **map-request** **Example:** `FabricEdge(config-router-lisp-instance-service)# map-cache 0.0.0.0/0 map-request`	Generates a static map request for the destination EID.
Step 7	**exit-service-ipv4** **Example:** `FabricEdge(config-router-lisp-instance-service)# exit-service-ipv4`	Exits service submode.
Step 8	**exit-instance-id** **Example:** `FabricEdge(config-router-lisp-instance)# exit-instance-id`	Exits instance submode.
Step 9	**instance-id** *instance* **Example:** `FabricEdge(config-router-lisp)# instance-id 101`	Creates a LISP EID instance to group multiple services.
Step 10	**service ethernet** **Example:** `FabricEdge(config-router-lisp-instance)# service ethernet`	Enables Layer 2 network services and enters service submode.
Step 11	**eid-table vlan** *vlan-number* **Example:** `FabricEdge(config-router-lisp-instance-service)# eid-table vlan 101`	Associates the LISP instance-id configured earlier with a VLAN through which the endpoint identifier address space is reachable.
Step 12	**broadcast-underlay** *multicast-group* **Example:** `FabricEdge(config-router-lisp-instance-service)# broadcast-underlay 239.0.0.1`	Specifies the multicast group used by the underlay to carry the overlay Layer 2 broadcast traffic.
Step 13	**exit-service-ethernet** **Example:** `FabricEdge(config-router-lisp-instance-service)# exit-service-ethernet`	Exits service sub mode.
Step 14	**exit-instance-id** **Example:** `FabricEdge(config-router-lisp-instance)# exit-instance-id`	Exits instance sub mode.

Enabling ARP Flooding

Note You can perform the following configuration tasks from Fabric Edge Node only and not from your controller.

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `FabricEdge# configure terminal`	Enters global configuration mode.
Step 2	**router lisp** **Example:** `FabricEdge(config)# router lisp`	Enters LISP configuration mode.
Step 3	**instance-id** *instance* **Example:** `FabricEdge(config-router-lisp)# instance-id 3`	Creates a LISP EID instance to group multiple services. Configurations under this instance-id are applicable to all services underneath it.
Step 4	**service ipv4** **Example:** `FabricEdge(config-router-lisp-instance)# service ipv4`	Enables Layer 3 network services for the IPv4 address family and enters the service submode.
Step 5	**database-mapping** *eid* **locator-set** *RLOC name* **Example:** `FabricEdge(config-router-lisp-instance-dynamic-eid)# database-mapping 66.66.66.64/32 locator-set rloc1`	Configures EID to RLOC mapping relationship.
Step 6	**map-cache** *destination-eid* **map-request** **Example:** `FabricEdge(config-router-lisp-instance-service)# map-cache 0.0.0.0/0 map-request`	Generates a static map request for the destination EID.
Step 7	**exit-service-ipv4** **Example:** `FabricEdge(config-router-lisp-instance-service)# exit-service-ipv4`	Exits service submode.
Step 8	**exit-instance-id** **Example:**	Exits instance submode.

	Command or Action	Purpose
	`FabricEdge(config-router-lisp-instance)# exit-instance-id`	
Step 9	**instance-id** *instance* **Example:** `FabricEdge(config-router-lisp)# instance-id 101`	Creates a LISP EID instance to group multiple services.
Step 10	**service ethernet** **Example:** `FabricEdge(config-router-lisp-instance)# service ethernet`	Enables Layer 2 network services and enters service submode.
Step 11	**eid-table vlan** *vlan-number* **Example:** `FabricEdge(config-router-lisp-instance-service)# eid-table vlan 101`	Associates the LISP instance-id configured earlier with a VLAN through which the endpoint identifier address space is reachable.
Step 12	**flood arp-nd** **Example:** `FabricEdge(config-router-lisp-instance-service)# flood arp-nd`	Enables ARP flooding.
Step 13	**database-mapping** *mac* **locator-set** *RLOC name* **Example:** `FabricEdge(config-router-lisp-instance-service)# database-mapping mac locator-set rloc1`	Configures EID to RLOC mapping relationship.
Step 14	**exit-service-ethernet** **Example:** `FabricEdge(config-router-lisp-instance-service)# exit-service-ethernet`	Exits service sub mode.
Step 15	**exit-instance-id** **Example:** `FabricEdge(config-router-lisp-instance)# exit-instance-id`	Exits instance sub mode.

Verifying Passive Client Configuration

To verify the status of the Passive Client, use the following command:

```
Device# show wireless profile policy detailed sample-profile-policy

Policy Profile Name           : sample-profile-policy
Description                   : sample-policy
Status                        : ENABLED
```

```
VLAN                          : 20
Client count                  : 0
Passive Client                : ENABLED    <--------------------
WLAN Switching Policy
  Central Switching           : ENABLED
  Central Authentication      : ENABLED
  Central DHCP                : DISABLED
  Override DNS                : DISABLED
  Override NAT PAT            : DISABLED
  Central Assoc               : DISABLED
.
.
.
```

To verify VLANs that have ARP broadcast enabled, use the following command:

```
Device# show platform software arp broadcast

Arp broadcast is enabled on vlans:
20
```