



Configuring Local Area Bonjour for Wireless Local Mode

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Overview of Local Area Bonjour for Wireless Local Mode

The Cisco Catalyst 9800 series controller introduces unicast mode function in Local Area Bonjour network domain. The enhanced gateway function at the first hop of Wired and Wireless networks communicates directly with any industry standard RFC 6762 compliant Multicast DNS (mDNS) end point in Layer 2 Unicast mode. The controller also introduces new service-peer mode expanding classic single-gateway controller to end-to-end service-routing with upstream SDG agent switch to enable unicast-mode, increased scale, performance and resiliency in the network.

Prerequisites for Local Area Bonjour for Wireless Local Mode

The Cisco Catalyst 9800 series controller must be successfully configured and be operational before implementing Cisco Local Area Bonjour for local mode wireless networks.

The following list provides the prerequisites for the controller that is to be deployed in service-peer mode:

- Ensure that the targeted controller for the service-peer role has the required Cisco IOS-XE software version. See *Supported SDG Agents with Supported Licenses and Software Requirements* table in Cisco DNA Service for Bonjour Solution Overview chapter.
- Ensure that the controller runs a valid Cisco DNA-Advantage license.
- Ensure that the upstream distribution-layer Cisco Catalyst switch in SDG agent mode runs a valid Cisco DNA-Advantage license.

- Ensure that the controller is interconnected as Layer 2 trunk in static 802.1Q mode, when Layer 2 Unicast service-routing is running between SDG agent in distribution-layer and the controller service-peer.
- Ensure that the controller has IP reachability to upstream Cisco Catalyst 9000 series switches in SDG agent mode over same the IPv4 wireless management subnet.
- Ensure that global multicast is enabled on the controller and AP is set to multicast mode. All local mode APs must join the multicast group in the network to successfully process mDNS messages.

Restrictions for Local Area Bonjour for Wireless Local Mode

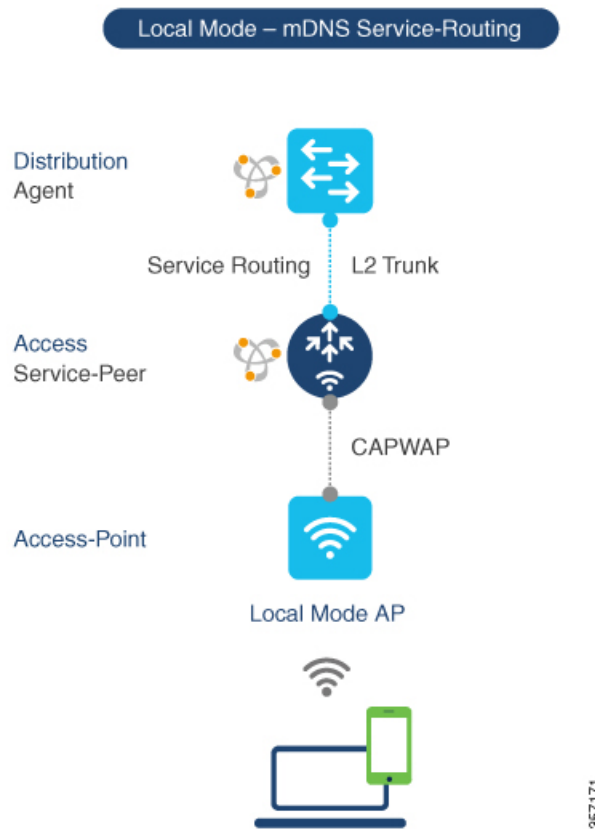
- Controller management port is not supported for service-routing with upstream Catalyst SDG Agent switch.
- The controller in service peer mode supports location-based service for access points in local mode and FlexConnect central switching mode.
- The controller supports location-based capabilities only between wireless connected service provider and the receiver.
- The controller does not support service-routing configuration using GUI.

Understanding Local Area Bonjour for Wireless Local Mode

The traditional wireless controller supported mDNS snooping function with various advancements for wireless networks. As the enterprise requirements expands, it drives the IT organization to introduce new network deployment models, supporting mobile devices and distributed zero-configuration services following increased scale, granular security control and resiliency for mission critical networks. The unified Cisco IOS-XE operating system across Cisco Catalyst 9000 series LAN switches and Cisco Catalyst 9800 series controller enables distributed Bonjour gateway function at the network edge. With end-to-end Wide Area Bonjour service-routing, the new solution enables service-oriented enterprise networks with intuitive user-experience.

The following figure illustrates the controller platform supporting mDNS gateway function to wireless users in local mode and builds service-routing peering with upstream Cisco Catalyst 9000 series switch for network-wide services discovery and distribution based on IT-managed granular policies and locations. The unicast based service-routing between the controller in service-peer mode and upstream SDG-Agent switch eliminates mDNS flooding over Layer 2 trunk ports and provide increase bandwidth and eliminates mDNS flood over wireless networks and Layer 2 trunk to upstream network.

Figure 1: Cisco Catalyst 9800 Series Controller Local Area Bonjour for Wireless Local Mode

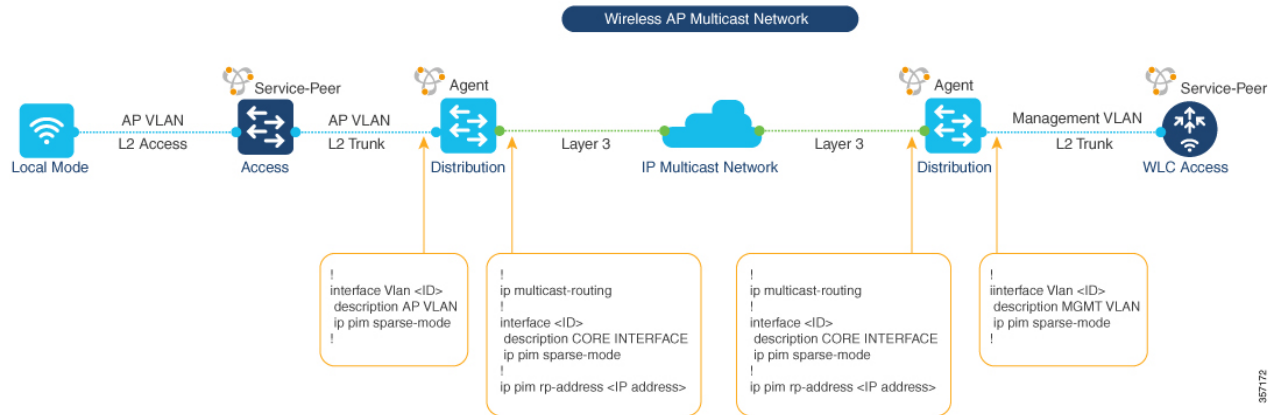


Configuring Wireless AP Multicast

The controller and AP by default prevents forwarding of Layer 2 or Layer 3 Multicast frames between wireless and wired network infrastructure. The forwarding is supported with stateful capabilities enabled using AP multicast. To allow mDNS message processing over a wireless network, multicast must be enabled and unique AP multicast group must be configured on the controller to advertise in IP core network. This AP multicast group is only required for APs to enable Multicast over Multicast (MCMC) capabilities in the network. The Bonjour solution do not require any other multicast requirements on wireless client VLAN; thus, it is optional and applicable only for other Layer 3 multicast applications.

The figure given below illustrates end-to-end wireless multicast configuration requirement to ensure wireless APs successfully join the controller-announced multicast group.

Figure 2: Multicast Routing in IP Core Network



Configuring Wireless AP Multicast (GUI)

This procedure configures wireless AP multicast on a controller in service-peer mode.

Procedure

- Step 1** Choose **Configuration > Services > Multicast**.
- Step 2** Set the **Global Wireless Multicast Mode** to **Enabled**.
- Step 3** From the AP Capwap Multicast drop-down list, select **Multicast**.
- Step 4** Enter a unique IP address at **AP Capwap IPv4 Multicast group Address**.
- Step 5** Click **Apply**.
- Step 6** Click **Save**.

Configuring Wireless AP Multicast (CLI)

This procedure configures wireless AP multicast on a controller in service-peer mode.

Procedure

| | Command or Action | Purpose |
|---------------|--|--|
| Step 1 | configure terminal Example: Device# configure terminal | Enters global configuration mode. |
| Step 2 | wireless multicast Example: Device(config)# wireless multicast | Enable global IP multicast processing. |

| | Command or Action | Purpose |
|---------------|---|--|
| Step 3 | wireless multicast <i>IPv4-multicast-address</i> Example: Device(config)# wireless multicast 239.254.254.1 | Enables AP CAPWAP mode to Multicast with unique IPv4 multicast address configurations. |
| Step 4 | exit Example: Device(config-mdns-sd)# exit | Exits mDNS gateway configuration mode. |

Configuring Multicast in IP Network (CLI)

This procedure configures IP Multicast under AP VLAN, Management VLAN and IP core interfaces on upstream Catalyst LAN distribution-layer switch.

Procedure

| | Command or Action | Purpose |
|---------------|--|--|
| Step 1 | configure terminal Example: Device# configure terminal | Enters global configuration mode. |
| Step 2 | ip multicast-routing Example: Device(config)# ip multicast-routing | Enables IP multicast processing. |
| Step 3 | interface <i>interface-id</i> Example: Device(config)# interface TenGigabitEthernet 1/0 | Selects an interface that is connected to hosts and network devices on which PIM can be enabled. |
| Step 4 | ip pim sparse-mode Example: Device(config-if)# ip pim sparse-mode | Enables IP Multicast on Layer 3 interfaces of distribution and core layer network switches: <ul style="list-style-type: none"> • AP VLAN– Enables IP multicast on SVI interface on VLAN assigned to wireless APs of wireless AP distribution layer switch. • Management VLAN– Enables IP multicast on SVI interface on VLAN assigned to controller management VLAN of wireless distribution layer switch. • Layer 3 Interface– Enable IP multicast routing on all core network devices and Layer 3 interfaces. |

| | Command or Action | Purpose |
|---------------|--|---|
| Step 5 | exit Example: Device(config-if)# exit | Exits interface configuration mode. |
| Step 6 | ip pim rp-address rp-address Example: Device(config)# ip pim rp-address 239.254.254.100 | Configures IP Multicast RP address on core and distribution network switches. IP network may have alternate multicast routing method. |

Configuring Local Area Bonjour for Wireless Local Mode

This section provides configuration guidelines to implement Cisco Catalyst 9800 series controller as mDNS gateway and enable service-peer mode to enable service-routing with upstream distribution-layer Cisco Catalyst 9000 series switch in SDG-Agent mode to build Local Area Bonjour.

Configuring mDNS Service Policy (GUI)

The mDNS service policy consists of creating a service-list to permit built-in or user-defined custom service-types, associate service-list to a service-policy to enforce in ingress or egress direction and apply the service-policy to targeted Wireless Profile. This configuration is common on the controller in service peer or single-gateway solution for wireless networks.

This procedure configures mDNS Service-Policy on a controller in service-peer mode.

Procedure

-
- Step 1** Choose **Configuration > Services > mDNS**.
- Step 2** Set the mDNS Gateway button to **Enabled**.
- Step 3** Click **Service Policy** Tab.
- Step 4** Click **Service List** and click **Add**.
- This activates the Service List window.
- Step 5** In the **Service List Name** field, enter a unique name with alphanumeric value.
- Step 6** From the **Direction** drop-down list, select service list policy direction. Use **IN** for ingress or **OUT** for egress mDNS message matching policy.
- Step 7** Click **+Add Services** to add mDNS service-types in selected service list.
- Step 8** From the **Available Services** drop-down list, select built-in or custom mDNS service-type.
- Step 9** From the **Message Type** drop-down list, select **Announcement** to accept service advertisement or **Query** to permit service discovery from the network. Default message-type is **any**.
- Step 10** Click **Save** button to add mDNS service-type entry.
- Note** Repeat Step-7 to Step-9 to add more mDNS service-types in selected service list.

- Step 11** Click **Apply to Device**.
This creates a new mDNS Service List for selected direction.
- Note** Repeat Step-5 to Step-11 for bi-directional service list.
- Step 12** Click **Service-Policy** tab.
- Step 13** Click **+Add** to create new mDNS service-policy.
- Step 14** In the **Service Policy Name** field, enter a unique mDNS service policy name.
- Step 15** From the **Service List Input** drop-down list, select ingress mDNS service list input to enforce mDNS policies on ingress direction from wireless networks.
- Step 16** From the **Service List Output** drop-down list, select mDNS policies on egress direction to wireless networks.
- Step 17** Click **Apply to Device**.
This creates a new mDNS service policy.
- Step 18** Choose **Configuration > Tags & Profiles > Policy**
- Step 19** Choose or create a new **Policy Profile**.
- Step 20** Click **Advanced** tab.
- Step 21** From the **mDNS Service Policy** drop-down list, select an mDNS service policy.
Refer to Cisco Catalyst 9800 Series Configuration Guide to configure other policy profile parameters.
- Step 22** Click **Apply to Device** button.
This creates a new policy profile or updates an existing policy profile with mDNS service policy.
- Step 23** Click **Save**.

Configuring mDNS Service Policy (CLI)

This procedure builds and applies service-policies on target wireless profile in service-peer mode.

Procedure

| | Command or Action | Purpose |
|---------------|--|--|
| Step 1 | configure terminal Example: Device# configure terminal | Enters global configuration mode. |
| Step 2 | mdns-sd service-list <i>service-list-name</i> {in out} Example: Device(config)# mdns-sd service-list VLAN100-LIST-IN in Device(config)# mdns-sd service-list VLAN100-LIST-OUT out | Configures mDNS service-list to classify one or more service-types. Unique service-list is required to process incoming mDNS message and outbound response to requesting end points. |

| | Command or Action | Purpose |
|---------------|--|--|
| Step 3 | match service-definition-name [message-type {any announcement query}] Example: <pre>Device(config)# mdns-sd service-list VLAN100-LIST-IN in Device(config-mdns-sl-in)# match APPLE-TV Device(config-mdns-sl-in)# match PRINTER-IPPS message-type announcement</pre> | Matches inbound service-list. The controller validates to accept or drop incoming mDNS service-type (for example, Apple TV) advertisement or query matching message type. The service-list contains implicit deny at the end. Default message-type is “any”. |
| Step 4 | match service-definition-name [message-type {any announcement query}] Example: <pre>Device(config)# mdns-sd service-list VLAN100-LIST-OUT out Device(config-mdns-sl-in)# match APPLE-TV Device(config-mdns-sl-in)# match PRINTER-IPPS</pre> | Matches an outbound service-list. The controller provides local service proxy function by responding matching service-type to the requesting end points. For example, the Apple-TV and Printer learnt from VLAN 100 will be distributed to receiver in same VLAN 100. The service-list contains implicit deny at the end. The message-type for outbound service-list is not required. |
| Step 5 | exit Example: <pre>Device(config-mdns-sl-in)# exit</pre> | Returns to global configuration mode. |
| Step 6 | mdns-sd service-policy service-policy-name Example: <pre>Device(config)# mdns-sd service-policy VLAN100-POLICY</pre> | Creates a unique mDNS service-policy. |
| Step 7 | service-list service-list-name {in out} Example: <pre>Device(config-mdns-ser-policy)# service-list VLAN100-LIST-IN in Device(config-mdns-ser-policy)# service-list VLAN100-LIST-OUT out</pre> | Configure mDNS service-policy to associate service-list for each direction. |
| Step 8 | exit Example: <pre>Device(config-mdns-ser-policy)# exit</pre> | Exits mDNS service policy configuration mode. |
| Step 9 | wireless profile policy policy-name Example: <pre>Device(config)# wireless profile policy WLAN-PROFILE</pre> | Configures unique wireless profile policy name to associate mDNS service-policy. |

| | Command or Action | Purpose |
|----------------|---|--|
| Step 10 | mdns-sd service-policy <i>service-policy</i> Example: Device(config-wireless-policy) # mdns-sd service-policy VLAN100-POLICY | Associates mDNS service-policy to configured VLAN IDs. Note This step requires wireless profile policy to be administratively shutdown prior association service-policy and re-activate with no shutdown to make service-policy effective. |
| Step 11 | exit Example: Device(config-mdns-sd) # exit | Exits mDNS gateway configuration mode. |

Configuring Custom Service Definition (GUI)

The Cisco IOS-XE supports various built-in well-known mDNS service-definition types mapping to key mDNS PTR records to user-friendly names. For example, built-in Apple-TV service-type is associated with `_airplay._tcp.local` and `_raop._tcp.local` PTR records to successfully enable service in the network. The network administrator can create custom service-definition with matching mDNS PTR records to enable end mDNS service-routing in the network.

This procedure configures custom mDNS service definition and applies it to policy.

Procedure

-
- Step 1** Choose **Configuration > Services > mDNS**.
- Step 2** Set the mDNS Gateway button to **Enabled**.
- Step 3** Click **Service Policy** Tab.
- Step 4** Click **Add** to create new custom mDNS service-list definition.
This activates Service Definition window.
- Step 5** In the **Service Definition Name** field, enter a unique alphanumeric value.
- Step 6** (Optional) In the **Description** field, enter a description for the service definition.
- Step 7** In the **Service Type** field, enter single mDNS PoinTeR (PTR) record entry in `<_<service-type>.<protocol>.local` regular expression format. For example, `_airplay._tcp.local`
- Step 8** Click **+** to add custom mDNS service-type in selected definition list.
Note Repeat Steps 7 and Step 8 to add more custom service-type in selected definition list.
- Step 9** Click **Apply**.
- Step 10** Perform steps give in *Configuring mDNS Service Policy (GUI)* by selecting built-in or custom service-type to configure service list.
- Step 11** Click **Save**.
-

Configuring Custom Service Definition (CLI)

This procedure creates custom service-definition configuration to discover mDNS services from local wireless networks.

Procedure

| | Command or Action | Purpose |
|---------------|--|---|
| Step 1 | configure terminal Example: Device# configure terminal | Enters global configuration mode. |
| Step 2 | mdns-sd service-definition-name <i>service-definition-name</i> Example: Device(config)# mdns-sd service-definition APPLE-CLASSROOM | Creates unique service-definition name for custom service-types. |
| Step 3 | service-type <i>custom-mDNS-PTR</i> Example: Device(config-mdns-ser-def)# service-type _classroom._tcp.local | Configure an regular-expression string for custom mDNS PoinTeR(PTR) record. |
| Step 4 | exit Example: Device(config-mdns-ser-def)# exit | Returns to global configuration mode. |

Configuring mDNS Gateway on WLAN (GUI)

The mDNS gateway activation on targeted WLAN is required to start processing incoming mDNS messages from associated wireless clients. To activate mDNS gateway the WLAN must be administratively shutdown and re-enable thus it may require network downtime planning.

This procedure configures custom mDNS gateway and required policies.

Procedure

-
- Step 1** Choose **Configuration > Tags & Profiles > WLANs**.
 - Step 2** Click to enable the mDNS Gateway on existing **WLAN** row of Catalyst 9800 controller. Click + **Add** button to create new WLAN if required. Refer to Catalyst 9800 Series Wireless Controller Configuration Guide for step-by-step WLAN configuration.
 - Step 3** Click **Advanced** tab.
 - Step 4** From the **mDNS Mode** drop-down list, select **Gateway** to activate mDNS Gateway on the selected WLAN.
 - Step 5** Click **Apply to Device**.

Step 6 Click Save.

Configuring mDNS Gateway on WLAN (CLI)

This procedure implements mDNS gateway on a targeted WLAN of the controller in service-peer mode.

Procedure

| | Command or Action | Purpose |
|---------------|--|--|
| Step 1 | configure terminal Example: Device# configure terminal | Enters global configuration mode. |
| Step 2 | wlan profile-name WLAN-ID SSID-name Example: Device(config)# wlan WLAN-PROFILE 1 blizzard | Creates a unique WLAN. |
| Step 3 | mdns-sd-interface gateway Example: Device(config-wlan)# mdns-sd-interface gateway | Configure mDNS gateway on targeted WLAN. Note This step requires wireless profile policy to be administratively shutdown prior association service-policy and re-activate with no shutdown to make service-policy effective. |
| Step 4 | exit Example: Device(config-wlan)# exit | Returns to global configuration mode. |

Configuring Service-Routing on Service-Peer

The controller deployed in Service-Peer mode extends mDNS service discovery and distribution boundary beyond single controller to global IP network using on unicast based service-routing. The controller service peer must establish IP based unicast service-routing with Cisco Catalyst 9000 series switch in distribution layer network for global service-routing.

This procedure configures the controller in service peer mode.

Procedure

| | Command or Action | Purpose |
|---------------|--|-----------------------------------|
| Step 1 | configure terminal Example: Device# configure terminal | Enters global configuration mode. |

| | Command or Action | Purpose |
|--------|---|---|
| Step 2 | <p>mdns-sd gateway</p> <p>Example:</p> <pre>Device(config)# mdns-sd gateway</pre> | <p>Enables mDNS and enters in mDNS gateway configuration mode. The following optional parameters are available:</p> <ul style="list-style-type: none"> • active-query: Periodic mDNS query to refresh dynamic cache. • active-response: Periodic active mDNS response instead per request processing. • mode: Set Catalyst 9800 in service-peer mode. • sdg-agent: Unicast service-routing with targeted SDG-Agent. • service-announcement-count: Configures maximum advertisements in service-routing to SDG-Agent. • service-announcement-timer: Configures advertisements announce timer periodicity in service-routing to SDG-Agent. • service-query-count: Configures maximum queries in service-routing to SDG-Agent. • service-query-timer: Configures query forward timer periodicity in service-routing to SDG-Agent. • service-type-enumeration: Configures service enumeration. • source-interface: Configures the source interface. If the source interface is configured, it will be used for all mDNS transactions. By default, wireless management interface will be used. • transport: Use IPv4 (default) or IPv6 transport for mDNS messaging to end points. |

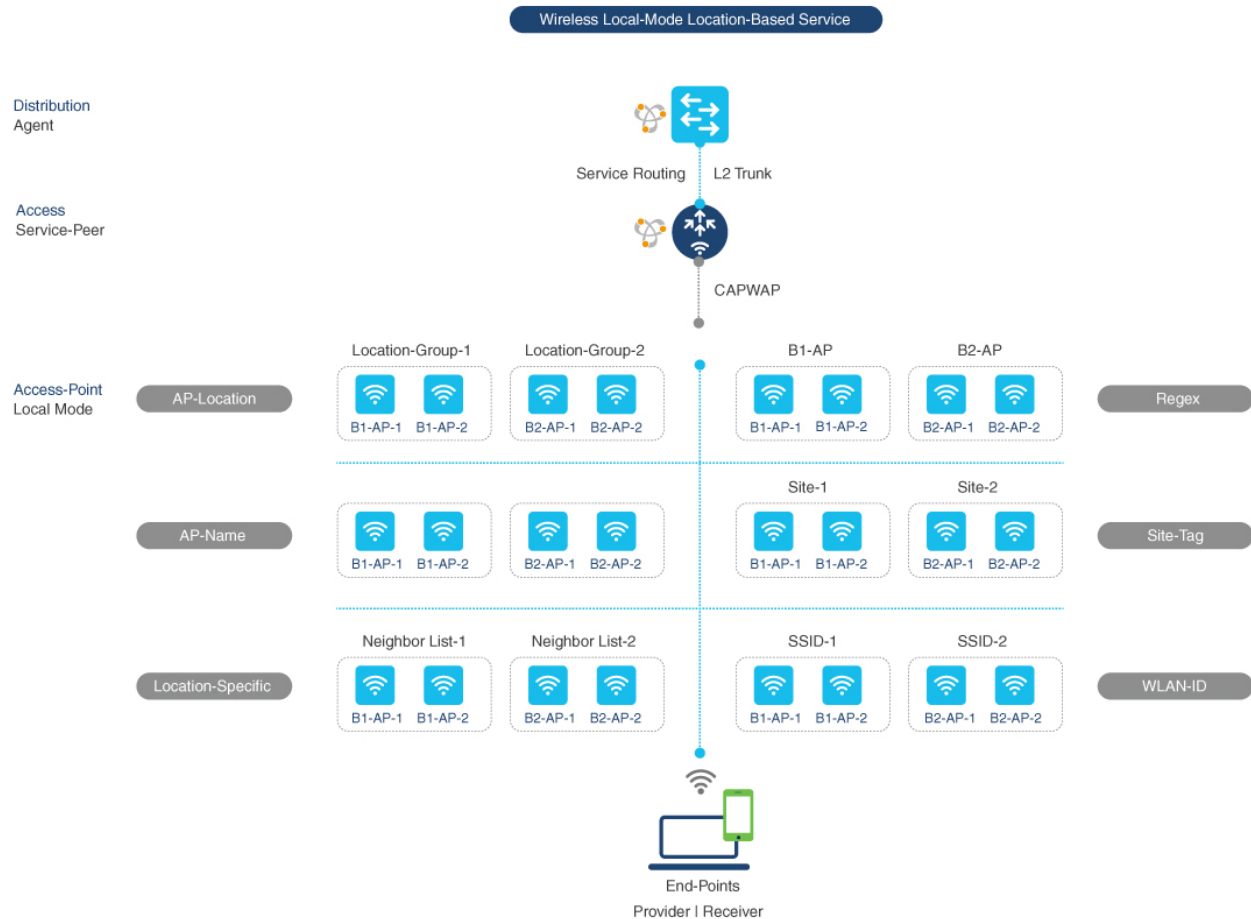
| | Command or Action | Purpose |
|---------------|---|--|
| | | <p>Note For rate-limit, service-announcement-count, service-announcement-timer, service-query-count and service-query-timer commands, you can retain the default value of the respective parameter for general deployments. Configure a different value, if required, for a specific deployment.</p> |
| Step 3 | <p>mode [service-peer]</p> <p>Example:</p> <pre>Device(config-mdns-sd)# mode service-peer</pre> | Configure mDNS gateway in service-peer mode. |
| Step 4 | <p>sdg-agent [IPv4 Address]</p> <p>Example:</p> <pre>Device(config-mdns-sd)# sdg-agent 10.0.2.254</pre> | Configure SDG Agent IPv4 address. Typically, the management VLAN gateway address. If FHRP mode, then use FHRP Virtual-IP address of management VLAN. |
| Step 5 | <p>exit</p> <p>Example:</p> <pre>Device(config-mdns-sd)# exit</pre> | Returns to global configuration mode. |

Configuring Location-Based mDNS on Service-Peer (GUI)

Cisco Catalyst 9800 series controller supports location-based mDNS service discovery and distribution between wireless service provider and receiver endpoints. The location-based mDNS service support can be implemented using multiple supporting AP classification methods to implement policy-based service distributions in wireless networks. The location-based mDNS service is effective and supported on wireless APs in Local-Mode or FlexConnect Central Switching modes.

The figure given below illustrates various LSS based mDNS service mode discovery and distribution support:

Figure 3: Location-Based mDNS Gateway



This procedure configures location-based mDNS service policy.

Procedure

- Step 1** Choose **Configuration > Services > mDNS**.
- Step 2** Set the mDNS Gateway button to **Enabled**.
- Step 3** Click **Service Policy** Tab.
- Step 4** Click **Service List** and click **Add**.
This activates the Service List window.
- Step 5** In the **Service List Name** field, enter a unique name with alphanumeric value.
- Step 6** From the **Direction** drop-down list, select service list policy direction. Use **IN** for ingress or **OUT** for egress mDNS message matching policy.
- Step 7** Click **+Add Services** to add mDNS service-types in selected service list.
- Step 8** From the **Available Services** drop-down list, select built-in or custom mDNS service-type.

- Step 9** From the **Message Type** drop-down list, select **Announcement** to accept service advertisement or **Query** to permit service discovery from the network. Default message-type is **any**.
- Step 10** Click **Save** button to add mDNS service-type entry.
- Note** Repeat Step-7 to Step-9 to add more mDNS service-types in selected service list.
- Step 11** Click **Apply to Device**.
- This creates a new mDNS Service List for selected direction.
- Note** Repeat Step-5 to Step-11 for bi-directional service list.
- Step 12** Click **Service-Policy** tab.
- Step 13** Click **+Add** to create new mDNS service-policy.
- Step 14** In the **Service Policy Name** field, enter a unique mDNS service policy name.
- Step 15** From the **Service List Input** drop-down list, select ingress mDNS service list input to enforce mDNS policies on ingress direction from wireless networks.
- Step 16** From the **Service List Output** drop-down list, select mDNS policies on egress direction to wireless networks.
- Step 17** Click **Apply to Device**.
- This creates a new mDNS service policy.
- Step 18** Choose **Configuration > Tags & Profiles > Policy**
- Step 19** Choose or create a new **Policy Profile**.
- Step 20** Click **Advanced** tab.
- Step 21** From the **mDNS Service Policy** drop-down list, select an mDNS service policy.
- Refer to Cisco Catalyst 9800 Series Configuration Guide to configure other policy profile parameters.
- Step 22** Click **Apply to Device** button.
- This creates a new policy profile or updates an existing policy profile with mDNS service policy.
- Step 23** Click **Save**.

Configuring Location-Based mDNS on Service-Peer (CLI)

This procedure implements LSS based mDNS service discovery and distribution between wireless endpoints on the targeted WLAN of the controller in service-peer mode.

Procedure

| | Command or Action | Purpose |
|---------------|---|-----------------------------------|
| Step 1 | configure terminal Example: Device# <code>configure terminal</code> | Enters global configuration mode. |

| | Command or Action | Purpose |
|---------------|---|---|
| Step 2 | mdns-sd service-policy <i>service-policy-name</i> Example: <pre>Device(config)# mdns-sd service-policy VLAN100-POLICY</pre> | Creates a unique mDNS service-policy. |
| Step 3 | location { ap-location ap-name lss regex site-tag ssid } Example: <pre>Device(config-mdns-ser-policy)# location ap-location</pre> | Creates a unique mDNS service-policy. <ul style="list-style-type: none"> • ap-location: Enables mDNS service discovery and distribution between wireless service provider and receiver connected to one or more AP configured in the same location name. The mDNS services from non-matching AP location is automatically filtered. • ap-name: Enables mDNS service discovery and distribution between wireless service provider and receiver connected to single AP matching same AP name. The mDNS services from non-matching AP name is automatically filtered. • lss: Enables mDNS service discovery and distribution between wireless service provider and receiver connected to same and neighboring one or more AP based on RRM. The mDNS services from non-matching AP neighbor-list is automatically filtered. • regex: Enables mDNS service discovery and distribution between wireless service provider and receiver connected to one or more AP configured within matching AP name or AP Location name using regular-expression string. The mDNS services from non-matching AP names is automatically filtered. • site-tag: Enables mDNS service discovery and distribution between wireless service provider and receiver connected to one or more AP configured same site tag name. The mDNS services from non-matching site tag is automatically filtered. • ssid: Enables mDNS service discovery and distribution between wireless service provider and receiver connected to one or more AP configured same SSID name. The |

| | Command or Action | Purpose |
|---------------|--|---|
| | | mDNS services from non-matching SSID is automatically filtered. |
| Step 4 | exit Example: Device(config-mdns-ser-policy)# exit | Exits mDNS service policy configuration mode. |

Verifying mDNS Gateway Configuration

This section provides guidelines to verify various Local Area Bonjour domain mDNS service configuration parameters, cache records, statistics and more on the controller in service peer mode.

Table 1:

| Command or Action | Purpose |
|--|--|
| <pre>show mdns-sd cache { ap-mac client-mac detail glan-ID mdns-ap rlan-id statistics type udn wired wlan-id }</pre> | <p>Displays available mDNS cache records supporting multiple following variables providing granular source details:</p> <ul style="list-style-type: none"> • ap-mac: Displays one or more mDNS service instance cache records discovered from provided AP MAC address. • client-mac: Displays one or more mDNS service instance(s) cache records discovered from service provider wireless client MAC address. • detail: Displays mDNS record detail information combined with client and network attributes and other service parameters. • glan-ID: Displays one or more mDNS service instance(s) cache records discovered from provided Wired Guest LAN ID MAC address. • mdns-ap: Displays one or more mDNS service instance(s) cache records discovered from provided Wireless mDNS AP MAC address. • rlan-id: Displays one or more mDNS service instances(s) cache records discovered from provided Wired Remote LAN ID. Range 1-128. • statistics: Displays detail global bi-directional mDNS statistics for IPv4 and IPv6 transports with packet processing count for each mDNS record-type. • type: Displays one or more service-instance(s) cache records matching mDNS record-type, i.e., A-AAAA, PTR, SRV and TXT. • udn: Displays one or more mDNS service instance(s) cache records discovered from segmented Wireless service provider in User-Defined-Group (UDN) or shared-services. • wired: Displays one or more mDNS service instance(s) cache records discovered from upstream Layer 2 wired network. • wlan-id: Displays one or more mDNS service instance(s) cache records discovered from matching provided wlan-ID. Range 1-4096. |

| Command or Action | Purpose |
|---|--|
| show mdns-sd statistics { debug flexconnect glan-id rln-id wired wlan-id } | Displays detailed mdns statistics processed bi-directionally by system on each mDNS gateway enabled VLAN configured mDNS in Unicast mode. The expanded keyword of mDNS statistics can provide detail view on interface, policy, service-list and services. |
| show mdns-sd summary | Displays brief information about mDNS gateway and key configuration status on all VLANs and interfaces of the system. |

Verifying Catalyst WLC Service-Peer Configuration

This section provides guidelines to verify service peer service configuration and statistics.

Table 2:

| Command or Action | Purpose |
|---------------------------------------|--|
| show mdns-sd sp-sdg statistics | Displays mDNS service-routing statistics between Catalyst 9800 service-peer and upstream SDG Agent switch for global service discovery and distribution. |
| show mdns-sd summary | Displays brief information about mDNS gateway and key configuration status and parameters of the system. |

Reference

Table 3:

| Related Topic | Document Title |
|---|--|
| DNA Service for Bonjour Deployment on Cisco Catalyst 9600 Switch | Cisco Catalyst 9600 Series Switch Software Configuration Guide, Release 17.5.X |
| DNA Service for Bonjour Deployment on Cisco Catalyst 9500 Switch | Cisco Catalyst 9500 Series Switch Software Configuration Guide, Release 17.5.X |
| DNA Service for Bonjour Deployment on Cisco Catalyst 9400 Switch | Cisco Catalyst 9400 Series Switch Software Configuration Guide, Release 17.5.X |
| DNA Service for Bonjour Deployment on Cisco Catalyst 9300 Switch | Cisco Catalyst 9300 Series Switch Software Configuration Guide, Release 17.5.X |
| Cisco Wide Area Bonjour Application on Cisco Catalyst Center User Guide | Cisco Wide Area Bonjour Application on Cisco Catalyst Center User Guide, Release 2.2.2 |

