



## **Cisco Wide Area Bonjour Application on Cisco DNA Center User Guide, Release 2.3.3**

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### **Americas Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
<http://www.cisco.com>  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 527-0883

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## CHAPTER

# 1

## New and Changed Information

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### New and Changed Features

The following table summarizes the new and changed features and provides information about where they are documented.

**Table 1: New and Changed Features for Cisco DNA Center, Release 2.3.3.3**

Feature	Description	Where Documented
Support for Cisco Nexus 9000 Series Switches	Cisco DNA Service for Bonjour supports Cisco Nexus 9000 Series Switches as an SDG agent in multicast mode.	<ul style="list-style-type: none"><li>• <a href="#">Solution Components, on page 4</a></li><li>• <a href="#">Supported Platforms, on page 5</a></li><li>• <a href="#">Supported Network Design, on page 6</a></li></ul>





## CHAPTER 2

# Cisco DNA Service for Bonjour Solution Overview

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- [About the Cisco DNA Service for Bonjour Solution, on page 3](#)
- [Solution Components, on page 4](#)
- [Supported Platforms, on page 5](#)
- [Supported Network Design, on page 6](#)

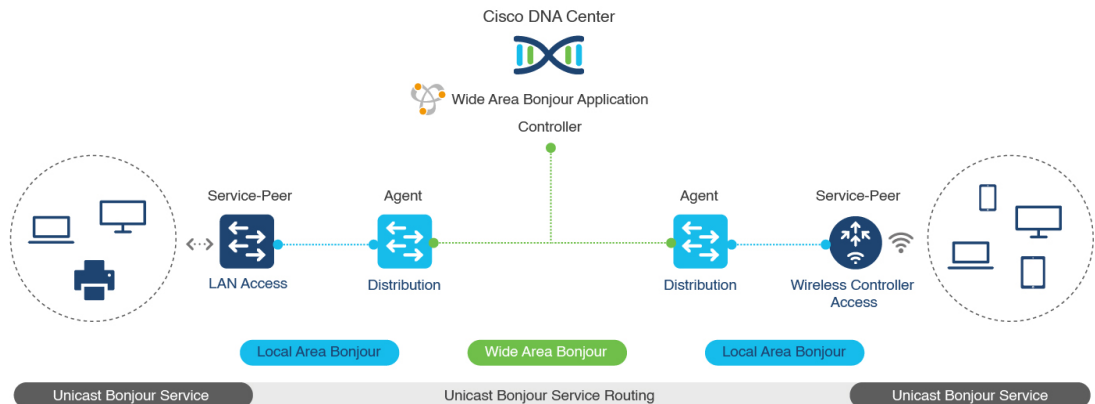
## About the Cisco DNA Service for Bonjour Solution

The Apple Bonjour protocol is a zero-configuration solution that simplifies rich services and enables intuitive experience between connected devices, services, and applications. Using Bonjour, you can discover and use IT-managed, peer-to-peer, audio and video, or Internet of Things (IoT) services with minimal intervention and technical knowledge. Bonjour is originally designed for single Layer 2 small to mid-size networks, such as home or branch networks. The Cisco DNA Service for Bonjour solution eliminates the single Layer 2 domain constraint and expands the matrix to enterprise-grade traditional wired and wireless networks, including overlay networks such as Cisco Software-Defined Access (SD-Access) and industry-standard BGP EVPN with VXLAN. The Cisco Catalyst 9000 Series LAN switches, Cisco Nexus 9300 Series Switches, and Cisco Catalyst 9800 Series Wireless Controller follow the industry standard, RFC 6762-based multicast DNS (mDNS) specification to support interoperability with various compatible wired and wireless consumer products in enterprise networks.

The Cisco Wide Area Bonjour application on Cisco DNA Center enables mDNS service routing to advertise and discover services across enterprise-grade wired and wireless networks. The new-distributed architecture is designed to eliminate mDNS flood boundaries and transition to unicast-based service routing, providing policy enforcement points and enabling the management of Bonjour services.

The following figure illustrates how the Cisco Wide Area Bonjour application operates across two integrated service-routing domains.

Figure 1: Cisco Wide Area Bonjour Solution Architecture



- Local Area Service Discovery Gateway Domain - Unicast Mode:** The new enhanced Layer 2 unicast policy-based deployment model. The new mDNS service discovery and distribution using the Layer 2 unicast address enables flood-free LAN and wireless networks. Cisco Catalyst 9000 Series Switches and Cisco Catalyst 9800 Series Wireless Controller in Layer 2 mode introduce a new service-peer role, replacing the classic flood-n-learn, for new unicast-based service routing support in the network. The service-peer switch and wireless controller also replace mDNS flood-n-learn with unicast-based communication with any RFC 6762 mDNS-compatible wired and wireless endpoints.
- Wide-Area Service Discovery Gateway Domain:** The Wide Area Bonjour domain is a controller-based solution. The Bonjour gateway role and responsibilities of Cisco Catalyst and Cisco Nexus 9300 Series Switches are extended from a single SDG switch to an SDG agent, enabling Wide Area Bonjour service routing beyond a single IP gateway. The network-wide distributed SDG agent devices establish a lightweight, stateful, and reliable communication channel with a centralized Cisco DNA Center controller running the Cisco Wide Area Bonjour application. The SDG agents route locally discovered services based on the export policy.

**Note**

The classic Layer 2 multicast flood-n-learn continues to be supported on wired and wireless networks with certain restrictions to support enhanced security and location-based policy enforcement. The Cisco Catalyst and Cisco Nexus 9300 Series Switches at Layer 3 boundary function as an SDG to discover and distribute services between local wired or wireless VLANs based on applied policies.

## Solution Components

The Cisco DNA Service for Bonjour solution is an end-to-end solution that includes the following key components and system roles to enable unicast-based service routing across the local area and Wide Area Bonjour domain:

- Cisco Service Peer:** Cisco Catalyst Switches and Cisco Wireless Controllers in Layer 2 access function in service peer mode to support unicast-based communication with local attached endpoints and export service information to the upstream Cisco Catalyst SDG agent in the distribution layer.



**Note** Cisco Nexus 9300 Series Switches don't support unicast-based service routing with downstream Layer 2 access network devices.

- **Cisco SDG Agent:** Cisco Catalyst and Cisco Nexus 9300 Series Switches function as an SDG agent and communicate with the Bonjour service endpoints in Layer 3 access mode. At the distribution layer, the SDG agent aggregates information from the downstream Cisco service peer switch and wireless controller, or local Layer 2 networks, and exports information to the central Cisco DNA controller.



**Note** Cisco Nexus 9300 Series Switches don't support multilayer LAN-unicast deployment mode.

- **Cisco DNA controller:** The Cisco DNA controller builds the Wide Area Bonjour domain with network-wide and distributed trusted SDG agents using a secure communication channel for centralized services management and controlled service routing.
- **Endpoints:** A Bonjour endpoint is any device that advertises or queries Bonjour services conforming to RFC 6762. The Bonjour endpoints can be in either LANs or WLANs. The Cisco Wide Area Bonjour application is designed to integrate with RFC 6762-compliant Bonjour services, including AirPlay, Google Chrome cast, AirPrint, and so on.

## Supported Platforms

The following table lists the supported controllers, along with the supported hardware and software versions.

**Table 2: Supported Controllers with Supported Hardware and Software Versions**

Supported Controller	Hardware	Software Version
Cisco DNA Center appliance	DN2-HW-APL DN2-HW-APL-L DN2-HW-APL-XL	Cisco DNA Center, Release 2.3.2.3
Cisco Wide Area Bonjour application	—	2.4.264.12003

The following table lists the supported SDG agents along with their licenses and software requirements.

**Table 3: Supported SDG Agents with Supported License and Software Requirements**

Supported Platform	Supported Role	Local Area SDG	Wide Area SDG	Minimum Software
Cisco Catalyst 9200 Series Switches	SDG agent	Cisco DNA Advantage	Unsupported	Cisco IOS XE Bengaluru 17.6.2

Supported Platform	Supported Role	Local Area SDG	Wide Area SDG	Minimum Software
Cisco Catalyst 9200L Series Switches	—	Unsupported	Unsupported	—
Cisco Catalyst 9300 Series Switches	Service peer SDG agent	Cisco DNA Advantage	Cisco DNA Advantage	Cisco IOS XE Bengaluru 17.6.2
Cisco Catalyst 9400 Series Switches	Service peer SDG agent	Cisco DNA Advantage	Cisco DNA Advantage	Cisco IOS XE Bengaluru 17.6.2
Cisco Catalyst 9500 Series Switches	Service peer SDG agent	Cisco DNA Advantage	Cisco DNA Advantage	Cisco IOS XE Bengaluru 17.6.2
Cisco Catalyst 9500 High Performance Series Switches	Service peer SDG agent	Cisco DNA Advantage	Cisco DNA Advantage	Cisco IOS XE Bengaluru 17.6.2
Cisco Catalyst 9600 Series Switches	Service peer SDG agent	Cisco DNA Advantage	Cisco DNA Advantage	Cisco IOS XE Bengaluru 17.6.2
Cisco Catalyst 9800 Wireless Controller	Service peer	Cisco DNA Advantage	Unsupported	Cisco IOS XE Bengaluru 17.6.2
Cisco Catalyst 9800-L Wireless Controller	Service peer	Cisco DNA Advantage	Unsupported	Cisco IOS XE Bengaluru 17.6.2
Cisco Nexus 9300 Series Switches	SDG agent	Cisco DNA Advantage	Cisco DNA Advantage	Cisco NX-OS Release 10.2(3)F

## Supported Network Design

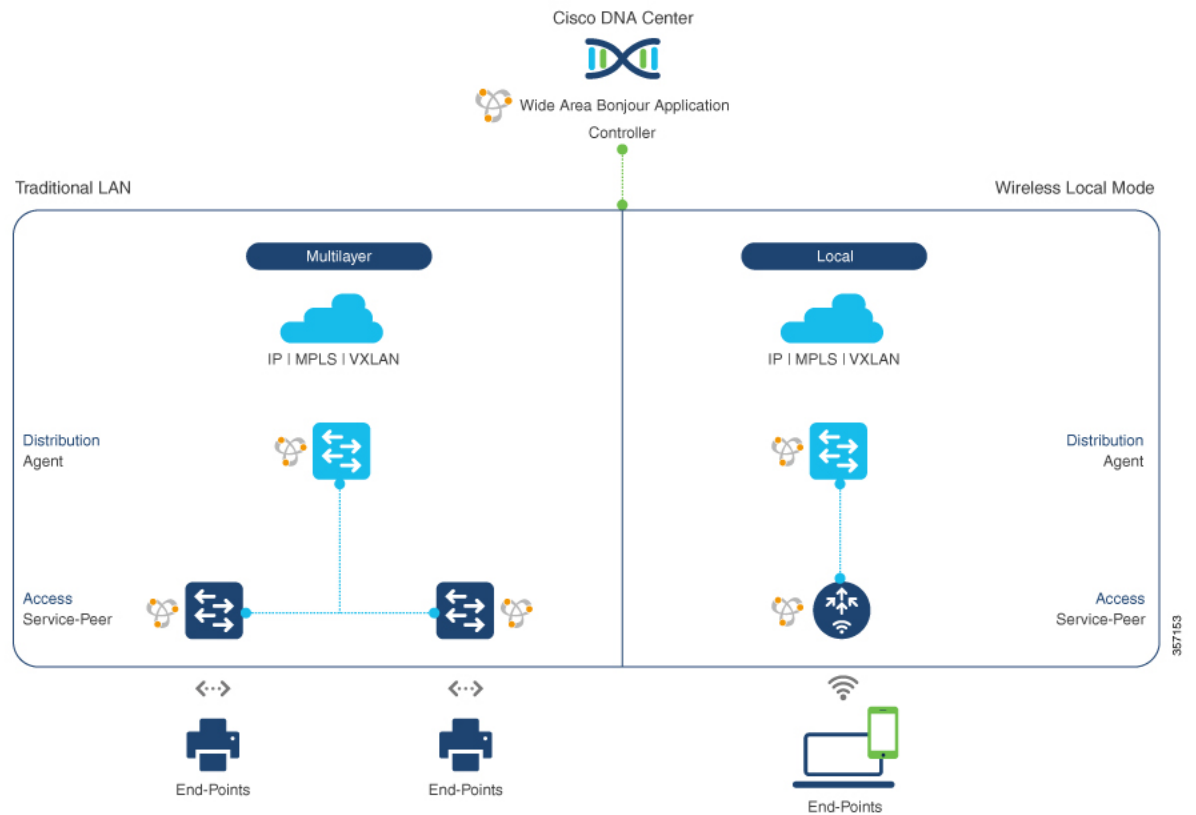
The Cisco DNA Service for Bonjour supports a broad range of enterprise-grade networks. The end-to-end unicast-based Bonjour service routing is supported on traditional, Cisco SD-Access, and BGP EVPN-enabled wired and wireless networks.

### Traditional Wired and Wireless Networks

Traditional networks are classic Layer 2 or Layer 3 networks for wired and wireless modes deployed in enterprise networks. Cisco DNA Service for Bonjour supports a broad range of network designs to enable end-to-end service routing and replace flood-n-learn-based deployment with a unicast mode-based solution.

The following figure illustrates traditional LAN and central-switching wireless local mode network designs that are commonly deployed in an enterprise.

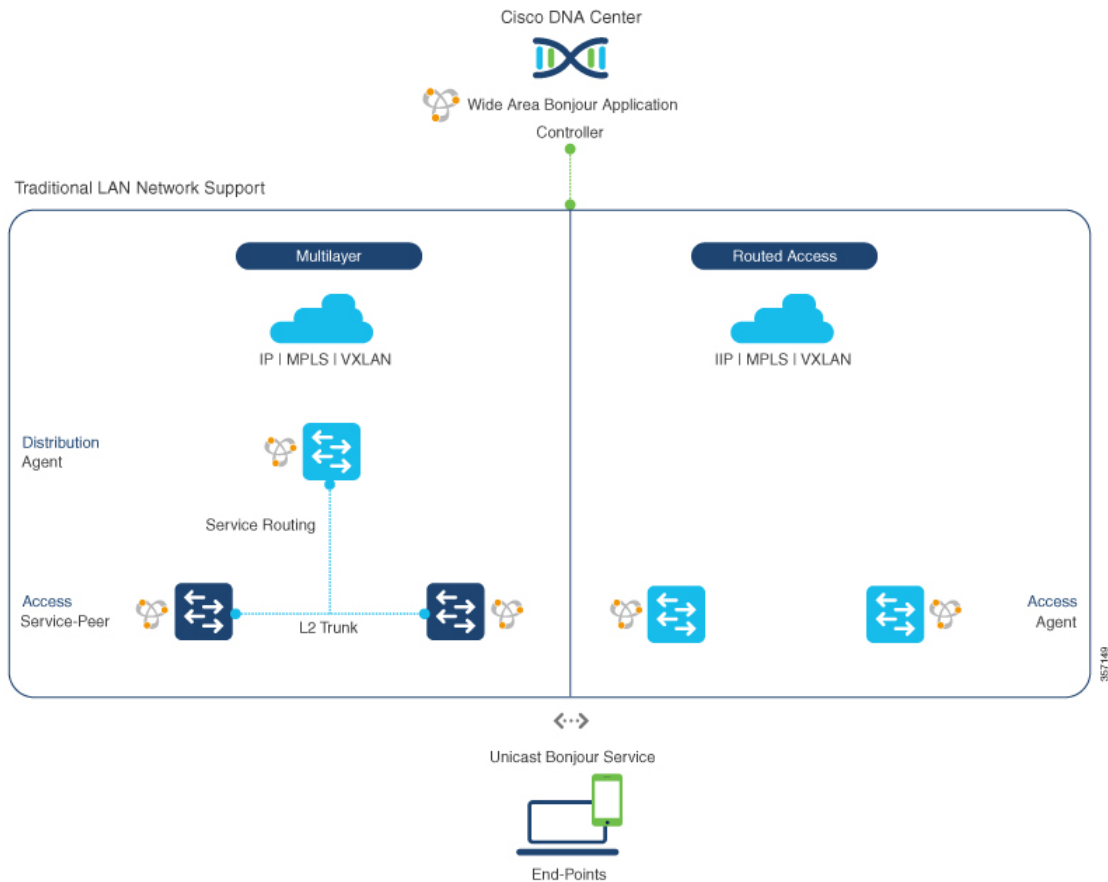
**Figure 2: Enterprise Traditional LAN and Wireless Local Mode Network Design**



## Wired Networks

The following figure shows the supported traditional LAN network designs that are commonly deployed in an enterprise.

**Figure 3: Enterprise Wired Multilayer and Routed Access Network Design**



The Cisco Catalyst or Cisco Nexus 9300 Series Switches in SDG agent role that provide Bonjour gateway functions are typically IP gateways for wired endpoints that could reside in the distribution layer in multilayer network designs, or in the access layer in Layer 3 routed access network designs:

- **Multilayer LAN—Unicast Mode:** In this deployment mode, the Layer 2 access switch provides the first-hop mDNS gateway function to locally attached wired endpoints. In unicast mode, the mDNS services are routed to the distribution layer systems providing IP gateway and SDG agent mode. The policy-based service routing between the SDG agents is performed by the Cisco DNA Center controller.
- **Multilayer LAN—Flood-n-Learn Mode:** In this deployment mode, the Layer 2 access switch or wireless controller are in mDNS passthrough modes with the Cisco Catalyst or Cisco Nexus 9300 Series Switches operating in the SDG agent mode. The mDNS gateway function at distribution layer in a network enables inter-VLAN mDNS local proxy. It also builds stateful Wide Area Bonjour unicast service routing with the Cisco DNA Center to discover or distribute mDNS services beyond a single IP gateway.
- **Routed Access:** In this deployment mode, the first-hop Cisco Catalyst or Cisco Nexus 9300 Series Switch is an IP gateway boundary and, therefore, it must also perform the SDG agent role. The policy-based service routing between the SDG agents is performed by the Cisco DNA Center controller.

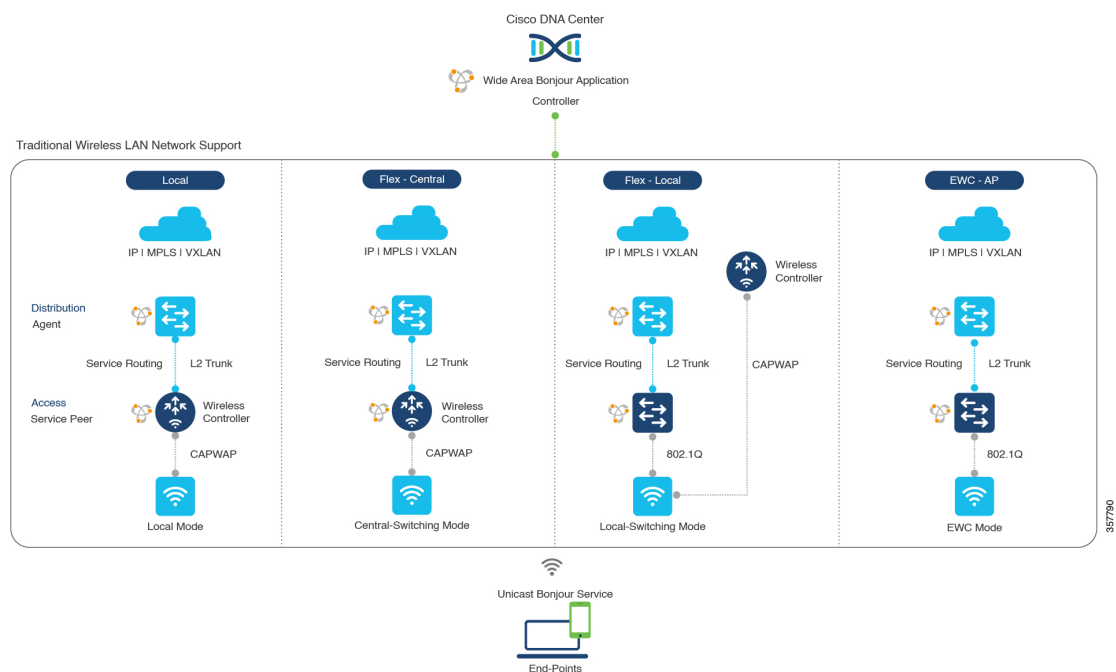


## Wireless Networks

The Cisco DNA Service for Bonjour extends the single wireless controller mDNS gateway function into the Wide Area Bonjour solution. The mDNS gateway on Cisco Catalyst 9800 Series Wireless Controller can be deployed in an enhanced mode as a service peer. In this mode, the wireless controller builds unicast service routing with an upstream Cisco Catalyst gateway switch for end-to-end mDNS service discovery. It replaces the classic flood-n-learn mDNS services from wired network using mDNS AP or other methods.

The following figure shows the supported traditional wireless LAN network designs that are commonly deployed in an enterprise. Based on the wireless network design, the mDNS gateway function may be on the wireless controller, or first-hop Layer 2 or Layer 3 Ethernet switch of an Access Point in local-switching mode.

**Figure 4: Enterprise Traditional Wireless LAN Network Design**



The Cisco DNA Service for Bonjour supports the following modes for wireless LAN networks:

- Local Mode:** In the central switching wireless deployment mode, the m-DNS traffic from local mode Cisco access points is terminated on the Cisco Catalyst 9800 Series Wireless Controller. The Cisco Catalyst 9800 Series Wireless Controller extends the mDNS gateway function to the new service peer mode. The wireless controller can discover and distribute services to local wireless users and perform unicast service routing over a wireless management interface to the upstream Cisco Catalyst Switch in the distribution layer, which acts as the IP gateway and the SDG agent.
- FlexConnect—Central:** The mDNS gateway function for Cisco access point in FlexConnect central switch SSID functions consistently as described in **Local Mode**. The new extended mDNS gateway mode on the Cisco Wireless Controller and upstream service routing with SDG agent operate consistently to discover services across network based on policies and locations.
- FlexConnect—Local:** In FlexConnect local switching mode, the Layer 2 access switch in mDNS gateway service peer mode provides the policy-based mDNS gateway function to locally attached wired and wireless users. The Cisco Catalyst Switches in the distribution layer function as SDG agents and enable

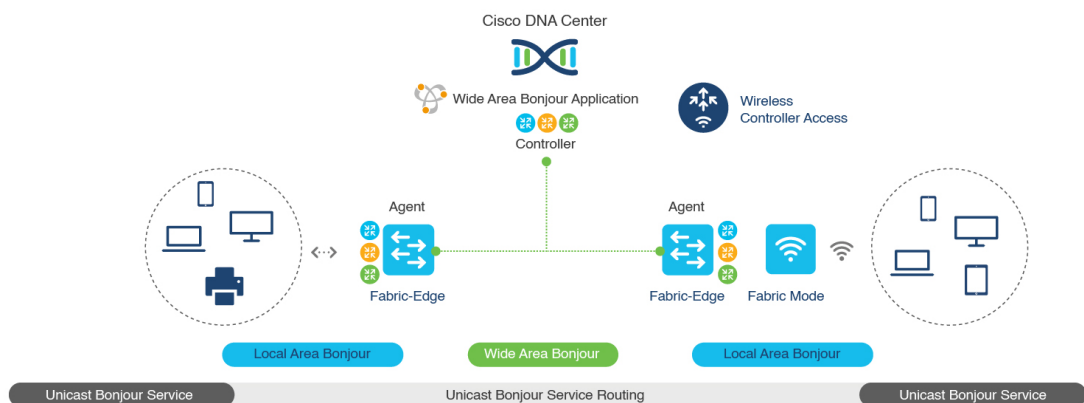
mDNS service-routing across all Layer 2 ethernet switches to support unicast-based service routing to LAN and wireless LAN user groups.

- **Embedded Wireless Controller—Access Point:** The Layer 2 access switch in service peer mode provides unified mDNS gateway function to wired and wireless endpoints associated with Cisco Embedded Wireless Controller on Cisco Catalyst 9100 Series Access Points. The SDG agent in the distribution layer provides unicast service routing across all Layer 2 service peer switches in the Layer 2 network block without any mDNS flooding.

## Cisco SD-Access Wired and Wireless Networks

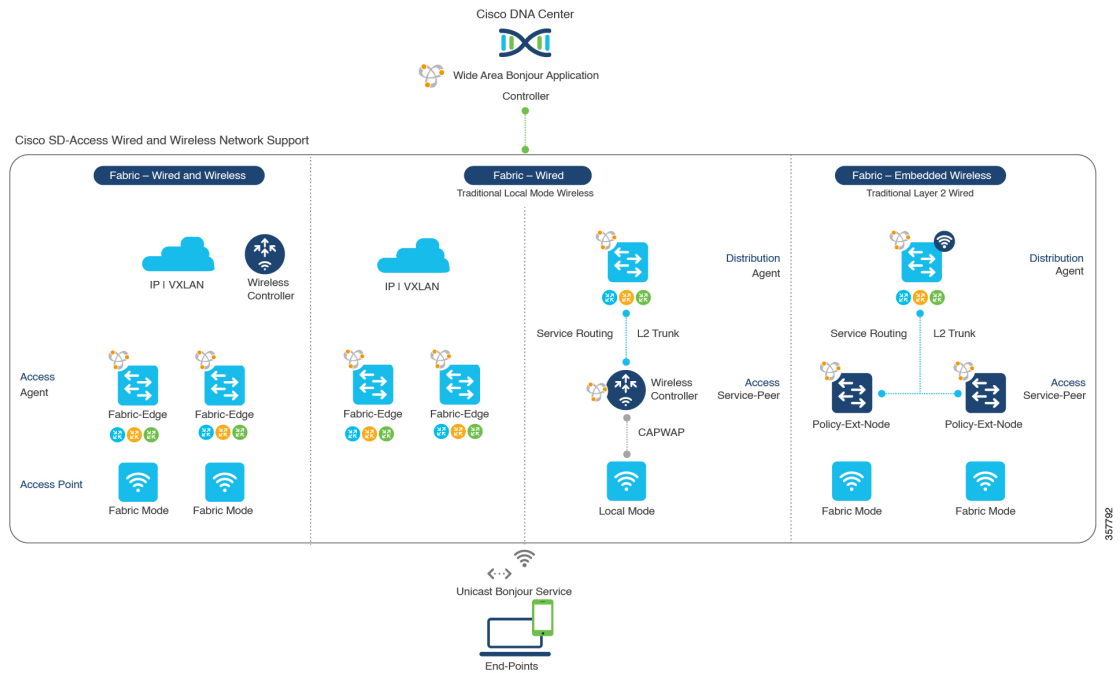
Cisco SD-Access-enabled wired and wireless networks support Cisco DNA Service for Bonjour across fabric networks. The Cisco Catalyst 9000 Series Switches support VRF-aware Wide Area Bonjour service routing to provide secure and segmented mDNS service discovery and distribution management for virtual networks. The VRF-aware unicast service routing eliminates the need to extend Layer 2 flooding, and improves the scale and performance of the fabric core network and endpoints.

**Figure 5: Cisco SD-Access Wired and Wireless Network Design**



Cisco SD-Access supports flexible wired and wireless network design alternatives to manage fully distributed, integrated, and backward-compatible traditional network infrastructure. Wide Area Bonjour service routing is supported in all network designs providing intuitive user experience. The following figure illustrates the various SD-Access enabled wired and wireless network design alternatives.

Figure 6: Cisco SD-Access Wired and Wireless Network Design Alternatives



The Cisco DNA Service for Bonjour for SD-Access enabled wired and fabric, or traditional mode-wireless networks use two-tier service routing providing end-to-end unicast-based mDNS solution. Based on the network design, each solution component is enabled in a unique role to support the Wide Area Bonjour domain:

- Fabric Edge SDG Agent:** The Layer 3 Cisco Catalyst Fabric Edge switch in the access layer configured as SDG agent provides unicast-based mDNS gateway function to the locally attached wired and wireless endpoints. The VRF-aware mDNS service policy provides network service security and segmentation in a virtual network environment. The mDNS services can be locally distributed and routed through centralized Cisco DNA Center.
- Policy Extended Node:** The Layer 2 Cisco Catalyst access layer switch enables first-hop mDNS gateway function without flooding across the Layer 2 broadcast domain. The unicast-based service routing with upstream Fabric Edge switch in the distribution layer enables mDNS service routing within the same Layer 2 network block. It can also perform remote service discovery and distribution from centralized Cisco DNA Center.
- Cisco Wireless Controller:** Based on the following wireless deployment modes, Cisco Wireless Controller supports unique function to enable mDNS service routing in Cisco SD-Access enabled network:
  - Fabric-Enabled Wireless:** Cisco Wireless Controller doesn't require any mDNS gateway capability to be enabled in distributed fabric-enabled wireless deployments.
  - Local Mode Wireless:** As Cisco Wireless Controller provides central control and data plane termination, it provides mDNS gateway in service peer mode for wireless endpoints. The wireless controller provides mDNS gateway between locally associated wireless clients. The wireless controller builds service routing with upstream SDG agent Catalyst switch providing IP gateway and service routing function for wireless endpoints.
  - Embedded Wireless Controller—Switch:** The Cisco Embedded Wireless Controller solution enables the lightweight integrated wireless controller function within the Cisco Catalyst 9300 Series

Switch. The Cisco Catalyst switches in the distribution layer function as SDG agents to the wired and wireless endpoints. The SDG agent in the distribution layer provides unicast service routing across all wireless access points and Layer 2 service peer switches without mDNS flooding.

- **Cisco DNA Center Controller:** The Cisco Wide Area Bonjour application on Cisco DNA Center supports policy and location-based service discovery, and distribution between network-wide distributed Fabric Edge switches in SDG agent mode.

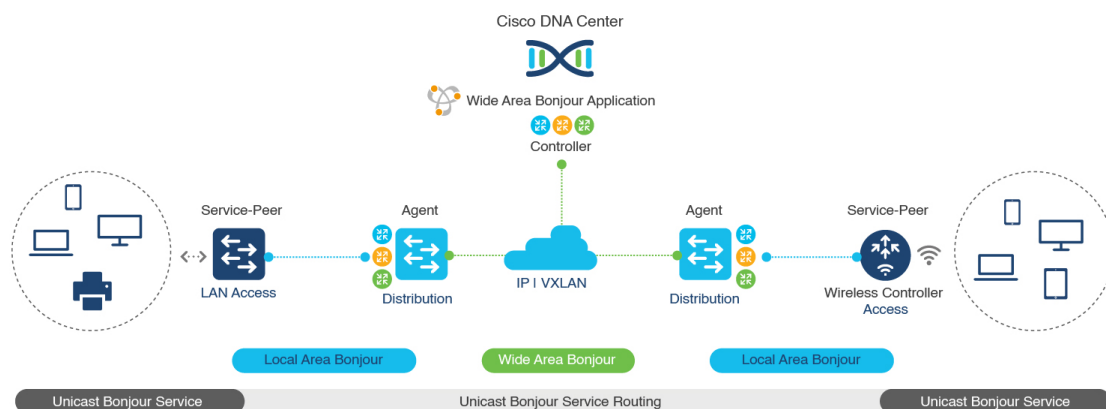
The Wide Area Bonjour communication between the SDG agent and controller takes place through the network underlay. Based on policies, the SDG agent forwards the endpoint announcements or queries to the Cisco DNA Center. After discovering a service, the endpoints can establish direct unicast communication through the fabric overlay in the same virtual network. The inter-virtual network unicast communication takes place through the Fusion router or external Firewall system. This communication is subject to the configured overlay IP routing and Security Group Tag (SGT) policies.

## BGP EVPN Networks

The BGP EVPN-based technology provides a flexible Layer 3 segmentation and Layer 2 extension overlay network. The VRF and EVPN VXLAN-aware Wide Area Bonjour service routing provides secure and segmented mDNS service solution. The overlay networks eliminate mDNS flooding over EVPN-enabled Layer 2 extended networks and solve the service reachability challenges for Layer 3 segmented routed networks in the fabric.

The following figure shows the BGP EVPN leaf switch in the distribution layer, supporting overlay Bonjour service routing for a BGP EVPN-enabled traditional Layer 2 wired access switch and traditional wireless local mode enterprise network interconnected through various types of Layer 2 networks and Layer 3 segmented VRF-enabled networks.

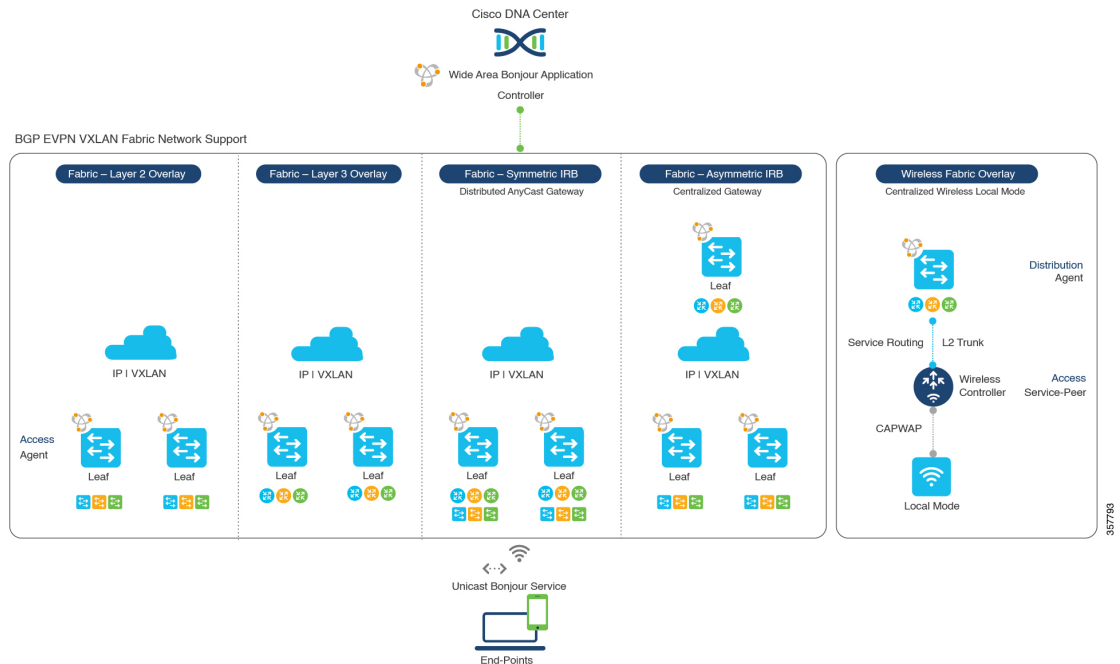
**Figure 7: Overlay Bonjour Service for a BGP EVPN-Enabled Enterprise Network**



Cisco DNA Service for Bonjour supports all the industry-standard overlay network designs enabling end-to-end unicast-based mDNS service routing, and preventing flooding and service boundary limitation across wired and wireless networks.

The following figure illustrates the various BGP EVPN VXLAN reference overlay network design alternatives. This network design enables end-to-end mDNS service discovery and distribution based on overlay network policies.

Figure 8: BGP EVPN VXLAN Wired and Wireless Design Alternatives



The Cisco Catalyst and Cisco Nexus 9000 Series Switches can be deployed in Layer 2 or Layer 3 leaf roles supporting mDNS service routing for a broad range of overlay networks. In any role, the mDNS communication is limited locally and supports end-to-end unicast-based service routing across Wide Area Bonjour domain:

- **Layer 2 Leaf SDG Agent:** The Cisco Catalyst or Cisco Nexus switches can be deployed as Layer 2 leaf supporting end-to-end bridged network with IP gateway within or beyond BGP EVPN VXLAN fabric network. By default, the mDNS is flooded as Broadcast, Unknown Unicast, Multicast (BUM) over the fabric-enabled core network. This mDNS flooding may impact network performance and security. The Layer 2 leaf, enabled as SDG agent, prevents mDNS flooding over VXLAN and supports unicast-based service routing.
- **Layer 3 Leaf SDG Agent:** The Cisco Catalyst or Cisco Nexus switches can be deployed as SDG agent supporting Layer 3 overlay network in BGP EVPN VXLAN fabric. The IP gateway and mDNS service boundary is terminated at the SDG agent switches and remote services can be discovered or distributed through centralized Cisco DNA Center.
- **Local Mode Wireless:** The centralized wireless local mode network can be terminated within or outside the EVPN VXLAN fabric domain to retain network segmentation and service discovery for wireless endpoints. The Cisco Catalyst 9800 Series Wireless Controller in service peer mode can build unicast service routing with distribution layer IP and SDG agent Cisco Catalyst switch to discover services from BGP EVPN VXLAN fabric overlay network.
- **Cisco DNA Center:** Cisco DNA Center supports Wide Area Bonjour capability to dynamically discover and distribute mDNS services based on Layer 2 or Layer 3 Virtual Network ID (VNID) policies to route the mDNS services between SDG agent switches in the network.

For more information about BGP EVPN networks, see [Cisco DNA Service for Bonjour Configuration Guide, Cisco IOS XE Bengaluru 17.6.x \(Catalyst 9600 Switches\)](#).





## CHAPTER 3

# Set up the Cisco Wide Area Bonjour Application

- [Overview of the Cisco Wide Area Bonjour Application Installation, on page 15](#)
- [Create User Roles, on page 16](#)
- [Update the Cisco Wide Area Bonjour Application, on page 16](#)
- [Add Devices to the Inventory, on page 17](#)

## Overview of the Cisco Wide Area Bonjour Application Installation

Depending on the installation status of your Cisco DNA Center and Cisco Wide Area Bonjour application, use one of the following procedures to install the Cisco Wide Area Bonjour application on your Cisco DNA Center.

### Install Cisco Wide Area Bonjour Application on a Fresh Installation of Cisco DNA Center

For a fresh ISO installation of Cisco DNA Center, follow the instructions outlined in the [Cisco DNA Center Appliance Installation Guide](#).

After you have installed the Cisco DNA Center appliance, if you have a firewall, allow Cisco DNA Center to access the following location for all system and package downloads: <https://www.ciscoconnectdna.com:443>. To ensure that you have cloud connectivity to AWS, log in to the cluster and run the following CLI command:

```
maglev catalog settings validate
```

For more information, see the [Cisco DNA Center Appliance Installation Guide](#).

After you have completed the configuration, connect to AWS, identify and download the Cisco Wide Area Bonjour application.


To install the Cisco Wide Area Bonjour application in Cisco DNA Center, complete the following steps:

- 
- Step 1** Click the menu icon (☰) and choose **System > Software Updates**.
- Step 2** Find **Wide Area Bonjour** on the list and click **Install** under the **Action** column.
-

## Install the Cisco Wide Area Bonjour Application on a Cisco DNA High-Availability Cluster

First, set up the Cisco DNA high-availability cluster. For more information, see [Cisco DNA Center High Availability Guide](#).

After your Cisco DNA Center is set up, complete the following steps to install the Cisco Wide Area Bonjour application.

- 
- Step 1** Click the menu icon () and choose **System > Software Updates**.
  - Step 2** Ensure **Updates** is selected in the left navigation pane.
  - Step 3** Find **Wide Area Bonjour** in the **Application Updates** list and click **install** under the **Action** column.
- 

## Create User Roles

Cisco DNA Center enables you to create user roles with controlled access. For information about user roles, see the [Cisco DNA Center Administrator Guide](#).

The minimum required permissions according to user role for the Cisco Wide Area Bonjour application on Cisco DNA Center are as follows:

**Table 4: Required Permissions According to User Role**

User Role	Access	Permission
Observer ( <b>OBSERVER-ROLE</b> )	<b>Network Services &gt; Bonjour</b>	Read
<ul style="list-style-type: none"> <li>• Administrator (<b>SUPER-ADMIN-ROLE</b>)</li> <li>• Network Administrator (<b>NETWORK-ADMIN-ROLE</b>)</li> </ul>	<b>Network Services &gt; Bonjour</b>	Write





---

**Note** If you're a user with an observer role, the options to create or edit data are not enabled in the GUI.

---

## Update the Cisco Wide Area Bonjour Application

Cisco periodically releases updates to the Cisco Wide Area Bonjour application. To ensure that you have the latest version of the Cisco Wide Area Bonjour application installed in your Cisco DNA Center, complete the following steps:

- 
- Step 1** Click the menu icon () and choose **System > Software Updates**.



- Step 2** Ensure **Updates** is selected in the left navigation pane.
- Step 3** Find **Wide Area Bonjour** in the **Application Updates** list and click **install** under the **Action** column.
- 

## Add Devices to the Inventory

Before you can configure a switch as an SDG agent, you must add it to the Cisco DNA Center Inventory. For more detailed information about the Inventory, see the [Cisco DNA Center User Guide](#).



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**Note** Before adding your devices to the Inventory, ensure that the hardware and software versions are supported. See [Supported Platforms, on page 5](#).

---

- Step 1** Click the menu icon (☰) and choose **Provision > Inventory**.
- Step 2** In the left pane, select the site to which you want to add a device.
- Step 3** Click **Add Device**.
- The Add Device dialog box is displayed.
- Step 4** From the **Type** drop-down list, choose **Network Device**.
- Step 5** In the **Device IP / DNS Name** field, enter the IP address or name of the device.
- Step 6** Expand the **SNMP** area, if it's not already visible.
- Step 7** From the **Version** drop-down list, choose **V2C** (SNMP Version 2c) or **V3** (SNMP, Version 3), and configure the required fields.
- Step 8** Expand the **SNMP RETRIES AND TIMEOUT** area, if it's not already expanded, and configure the **Retries** and **Timeout (in seconds)** fields.
- Step 9** Expand the **CLI** area, if it's not already expanded, and configure the required fields.
- Step 10** Expand the **NETCONF** area, if it's not already expanded, and configure the **Port** field.
- NETCONF requires that you configure SSH as the CLI protocol and define the SSH credentials.
- Note** NETCONF is necessary only for the wireless controller.
- Step 11** Click **Add**.
-





## CHAPTER 4

# Manage the Cisco Wide Area Bonjour Application

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- [Cisco Wide Area Bonjour Application Overview](#), on page 19
- [Create Wide Area Bonjour Domain and Policy Structure](#), on page 22
- [Understanding Global Policy Structure](#), on page 25
- [Flexible Wide Area Bonjour Service Routing Design](#), on page 26
- [Cisco Wide Area Bonjour Bulk Configuration](#), on page 27
- [Manage the Cisco Wide Area Bonjour Configuration](#), on page 32

## Cisco Wide Area Bonjour Application Overview

Cisco DNA Center supports rich network controller functions, automation, and assurance capabilities for enterprise networks. The Cisco Wide Area Bonjour application is an add-on service that enables controller functions to support mDNS service routing across multiple network deployment models. Cisco DNA Center, in controller mode, builds stateful service routing peer sessions with network-wide distributed SDG agents. It dynamically discovers mDNS services and distributes to other SDG agents. IT-defined and global policies in the Cisco Wide Area Bonjour application define mDNS service routing.

The Cisco Wide Area Bonjour application provides an intuitive GUI to build, manage, and troubleshoot network-wide service routing peers, global policies, service instances, and more. As a service routing controller, the Cisco Wide Area Bonjour application supports policy management to enable service routing and rich service-assurance capabilities for management and troubleshooting.



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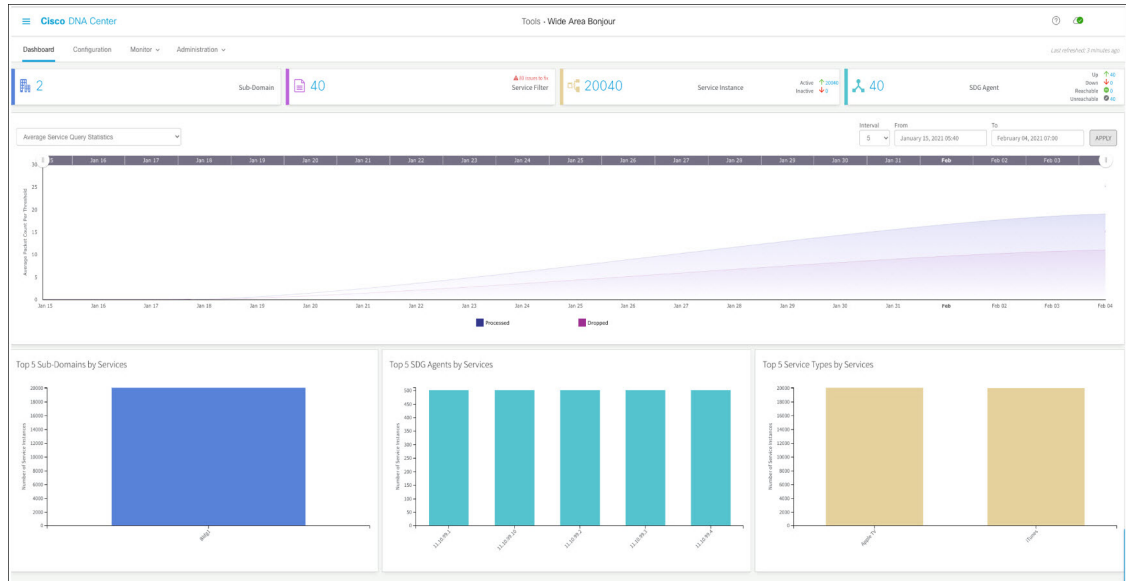
**Note** The Cisco Wide Area Bonjour application doesn't support network automation to implement service policies on network devices. You must manually configure service policies on your network.

---

This chapter provides an overview of the Cisco Wide Area Bonjour application and its supporting functions.

The following figure shows the Cisco Wide Area Bonjour application dashboard.

Figure 9: Cisco Wide Area Bonjour Application Dashboard



The following table explains the function of the four key areas of the Cisco Wide Area Bonjour application. For more information about implementing and managing global service routing, see [Monitor the Cisco Wide Area Bonjour Application, on page 87](#).

Table 5: Cisco Wide Area Bonjour Application Functions

Manage	Function
Dashboard	<p>The Cisco Wide Area Bonjour application dashboard provides a statistical view of global service routing policies and processing information. The dashboard is divided into the following categories, each providing unique service assurance capabilities:</p> <ul style="list-style-type: none"> <li>• <b>Dashlets:</b> Key indicators providing configured subdomains and service filter policy counts, dynamically discovered service instances, and real-time peering status for Wide Area Bonjour service routing.</li> <li>• <b>Service Query Statistics:</b> A two-tier historical chart view with granular intervals to monitor average and cumulative mDNS service query messages from SDG agents, and two-layer charts showing successful query responses and requests dropped due to mismatched service policies.</li> <li>• <b>Top Talkers:</b> Bar charts for top talkers in the network.</li> </ul>

Manage	Function
Configuration	<p>The <b>Configuration</b> tab of the Cisco Wide Area Bonjour application enables you to construct and manage global service routing policies. The <b>Configuration</b> tab is divided into the following sections:</p> <ul style="list-style-type: none"> <li>• <b>Domains and subdomains:</b> The logical structure of enterprise geolocations associated with SDG agents to enable service routing and policies in the Wide Area Bonjour domain.</li> <li>• <b>Service filters:</b> Intuitive two-sided policy constructs enabling global service discovery and distribution. The mDNS services are accepted from one or more source SDG agents. The mDNS services are distributed to one or more query SDG agents.</li> <li>• <b>360 degree view:</b> Brief SDG agents, policies, instance count statistics and status information at multiple subdomain levels for ease of operation and management.</li> </ul>
Monitor	<p>From the <b>Monitor</b> tab of the Cisco Wide Area Bonjour application you can view the detailed status of service routing, service instances, and troubleshooting information. The <b>Monitor</b> page is divided into the following categories:</p> <ul style="list-style-type: none"> <li>• <b>SDG agent:</b> The center point to manage, synchronize, and troubleshoot service routing with network-wide distributed SDG agent switches. Detailed view of the service filter, device reachability, and device serviceability for each SDG agent.</li> <li>• <b>Service instance:</b> A comprehensive view of service instance details in real-time providing complete reachability source of service, addressing plan, and service-route state in the Wide Area Bonjour domain.</li> <li>• <b>Troubleshooting:</b> The built-in toolkit to troubleshoot the service routing issues in the Wide Area Bonjour domain. The troubleshooting logs can be downloaded with selected message-type with brief information hinting possible challenges for self-resolution.</li> </ul>
Administration	<p>From the <b>Administration</b> tab of the Wide Area Bonjour application, you can manage advanced service routing parameters. From this tab of the application, you can manage the following:</p> <ul style="list-style-type: none"> <li>• <b>Service type:</b> The key tuple in building global service policies for Wide Area Bonjour service routing. Cisco DNA Center supports built-in or user-defined custom service type repository mapping of one or more mDNS poinTeR (PTR) records to user-friendly names.</li> <li>• <b>Global parameters:</b> Central service routing parameters to build and manage secure and reliable routing peer connections, such as MD5 authentication, keepalive timers, and inactive service instance management.</li> </ul>

# Create Wide Area Bonjour Domain and Policy Structure

Before building global service policies in the Wide Area Bonjour, you must first configure foundational settings. This section focuses on creating the multi-tier logical construct of domains and briefly explains service policy structures associated with each tier, to implement Wide Area Bonjour service routing policies.

The Wide Area Bonjour application supports the following user-defined domain hierarchy that may align with the hierarchy of the company's geolocation and building planning:

- **Root domain:** The Wide Area Bonjour application must have a root domain as the base configuration. The root domain can be defined as the company's name or major site location, for example. The Wide Area Bonjour application supports a single root domain.
- **Subdomain:** The subdomain is a logical construct which you can create, aligning with site location attributes (such as the building name, for example). The Wide Area Bonjour application supports multiple subdomains, and you can have further subdomains under a subdomain.

## Create Wide Area Bonjour Domains

The root domain configuration is the initial step to configure the Cisco Wide Area Bonjour application.



**Note** You can't edit the name of the root domain after it has been configured. To rename a root domain, you must first delete the domain and then reconfigure it with the new name.

The following figure shows the **Configuration** tab of the Cisco Wide Area Bonjour application before you configure a root domain.

**Figure 10: Configure a Root Domain in the Cisco Wide Area Bonjour Application**

It looks like there are no domains.

Once available, you can create domains/subdomains and associate policies & agents.

**Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.

**Step 2** In the **Domain Name** section, enter the name of the root domain.

**Step 3** (Optional) Enter a description for the root domain.

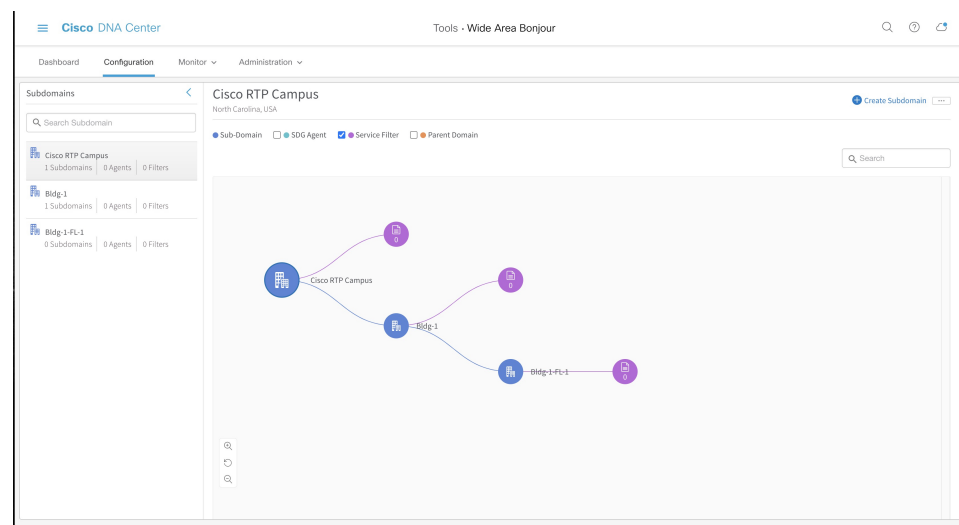
**Step 4** Click **CREATE**.

## Create Wide Area Bonjour Subdomain Hierarchies

Configuring a subdomain is a secondary step to configure the Cisco Wide Area Bonjour application based on your hierarchy configuration requirements. You can extend the subdomain hierarchy to as many levels as necessary. The Cisco Wide Area Bonjour application provides the flexibility to build the Wide Area Bonjour service routing global policies at any subdomain level.

The following figure shows the **Configuration** tab of the Cisco Wide Area Bonjour application.

**Figure 11: Cisco Wide Area Bonjour Application - Configuration**



The **Configuration** tab is divided into the following subdomain logical panels, supporting ease of configuration and managing large-scale global policies:

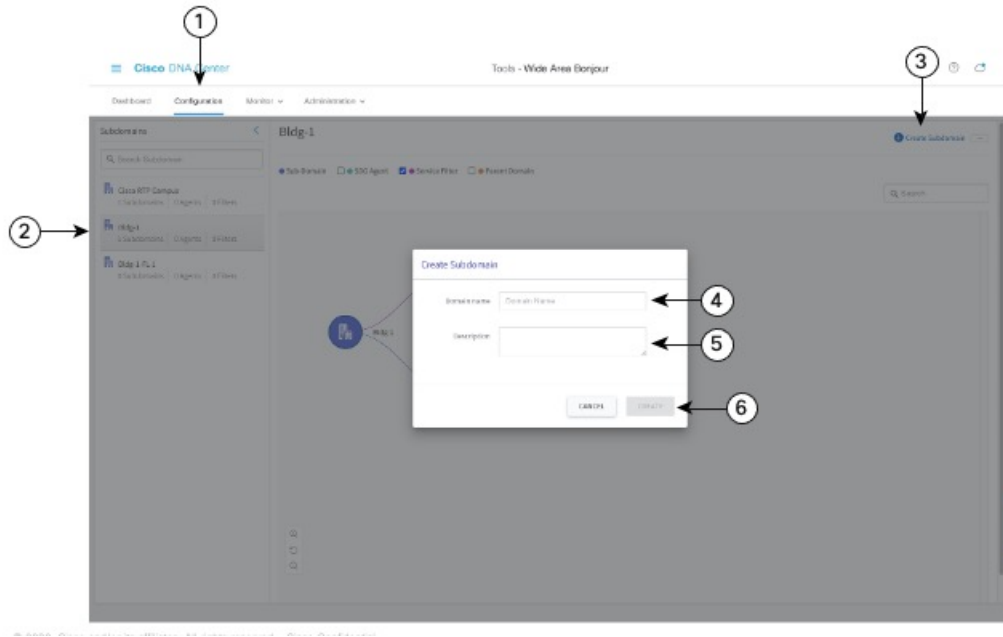
- **Subdomain panel:** A single-column table which lists configured root domain and subdomains. The network administrator can briefly collect aggregated counts of downstream subdomains, SDG agents, and configured service filters for global service-routing in the Wide Area Bonjour domain.
- **Subdomain Canvas:** A wide canvas which provides the complete domain hierarchical view in a graphical format. Service filter can be created on a subdomain at any level. The flexible tree structure can be collapsed to support a condensed view or expanded to enable a 360-degree view of SDG agents, and service filter counts on a per subdomain level.



**Note** You can't edit the name of a subdomain after it has been created. To modify the name of a subdomain, you must first delete the subdomain and then reconfigure it with the new name.

The following figure shows the steps to be followed to create a subdomain in the Cisco Wide Area Bonjour application.

Figure 12: Steps to Create a Subdomain Using the Cisco Wide Area Bonjour Application



- 
- Step 1** Navigate to the **Configuration** tab.
  - Step 2** From the left pane, select the domain or subdomain under which to create the new subdomain.
  - Step 3** Click **Create Subdomain** in the upper-right portion of the GUI.
  - Step 4** Enter a unique name for the subdomain in the **Domain Name** field.
  - Step 5** (Optional) Enter a description for the subdomain.
  - Step 6** Click **CREATE**.
- 

## Delete Wide Area Bonjour Domain Hierarchies

You can delete the root domain or a subdomain at any point in time. When you delete a domain, the stateful service-routing adjacencies with SDG agent switches in an associated domain or subdomain are immediately disconnected. Further, all dynamically discovered mDNS services are flushed away to enforce change immediately.




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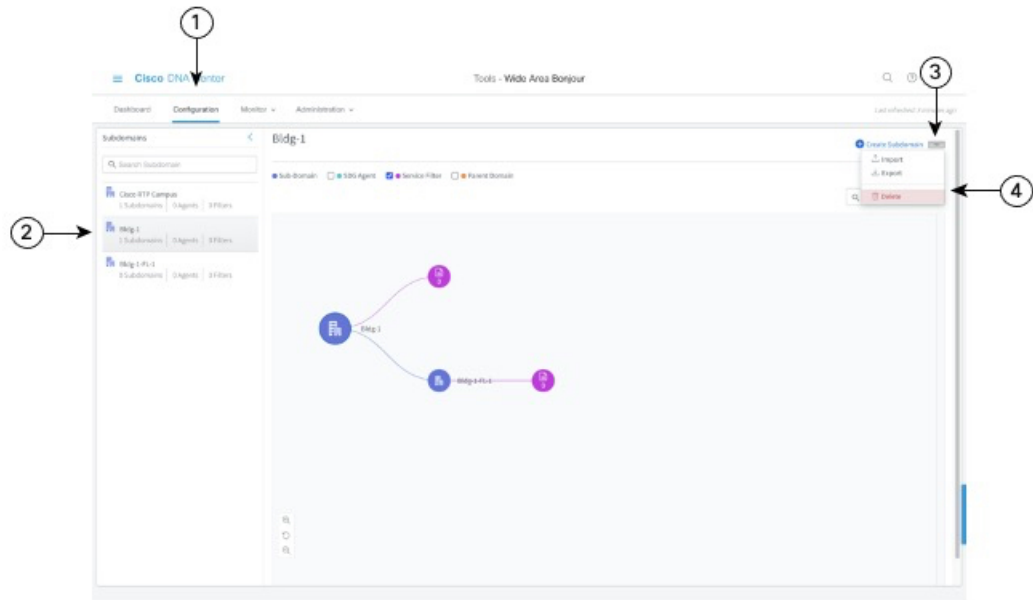
**Note** You can't undo the deletion of a domain or subdomain. To restore a domain or subdomain, you must manually reconfigure it or upload a backed up configuration file.

---

The following figure illustrates the steps required to delete a subdomain.



Figure 13: Steps to Delete a Subdomain in the Cisco Wide Area Bonjour Application



- 
- Step 1** Navigate to the **Configuration** tab.
  - Step 2** From the left pane, select the domain or subdomain to be deleted.
  - Step 3** From the options menu in the upper right portion of the screen, click **Delete**.
  - Step 4** Confirm that you want to delete the selected domain or subdomain.
- 

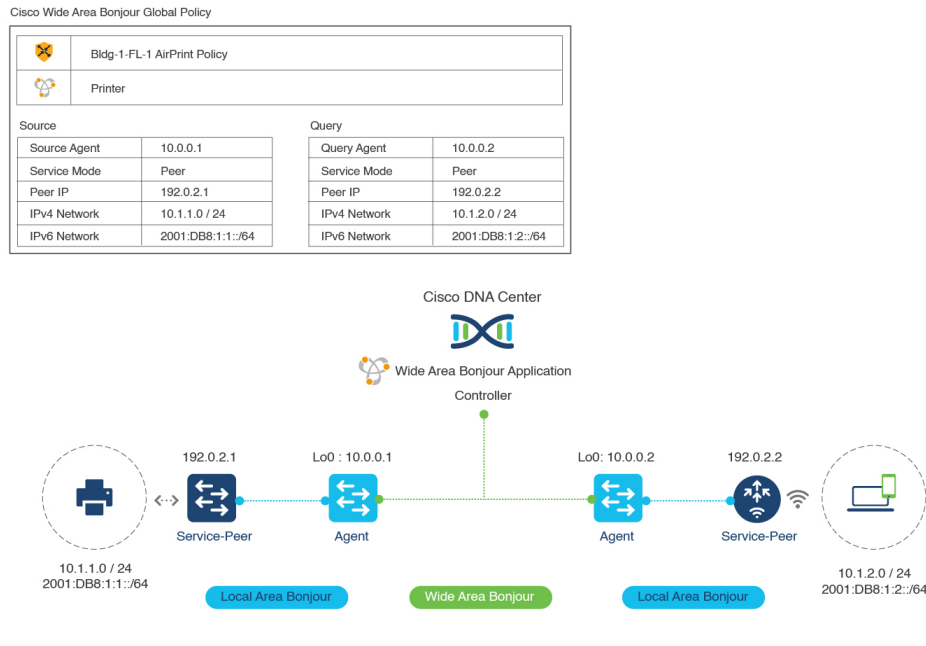
## Understanding Global Policy Structure

The global service-policy construct of the Cisco Wide Area Bonjour application uses fundamental concepts to enable policy-based mDNS service discovery and distribution with stateful and trusted Cisco Catalyst SDG agent switches. The global service-policy in Wide Area Bonjour is divided into two major categories: source and query.

You can build service filters in the Cisco Wide Area Bonjour application comprising a set of parameters, activating one or more mDNS service types to accept services from specific source SDG agent switches and route services to other SDG agents on-demand from remote receiver end points.

The following figure illustrates a reference global service filter in the Cisco Wide Area Bonjour application.

Figure 14: Reference Global Service Filter in the Cisco Wide Area Bonjour Application



In the illustration, Cisco Wide Area Bonjour accepts mDNS service-type Printer when all configured network service-routing parameters for the source SDG agent switch match those in the policy. The mDNS service-type Printer will be routed on-demand to the query SDG agent when all the configured network service-routing parameters match those from the wireless network location requesting the services.

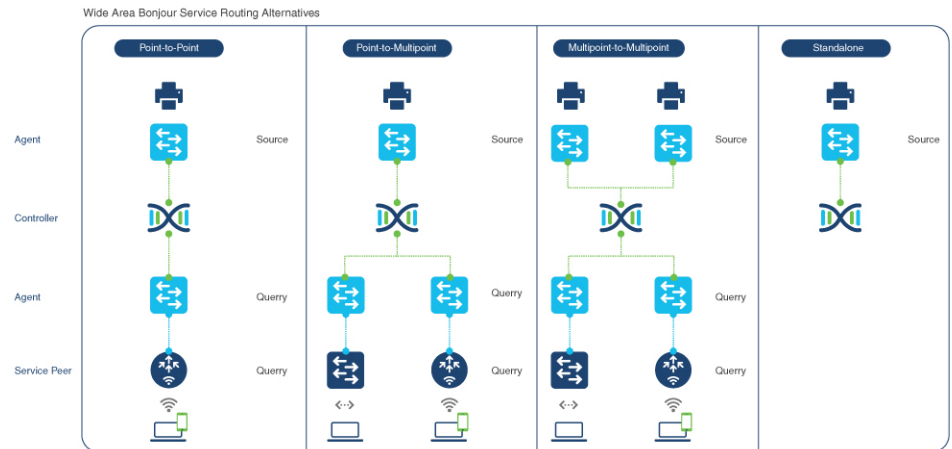
The Cisco Wide Area Bonjour application supports service-routing over multiple types of enterprise networks.

## Flexible Wide Area Bonjour Service Routing Design

Enterprise networks need flexibility to discover and dynamically route services across IP networks in various use cases. The Cisco Wide Area Bonjour application supports an intuitive GUI to build service routing policies for multiple types of routing topologies.

The following figure shows a reference global policy example in the Cisco Wide Area Bonjour application to enable service routing. You can build unique policies to support one or more mDNS service types to enable flexible routing across the network.

Figure 15: Flexible Wide Area Bonjour Service Routing Design



Each service routing policy can be planned and configured in Cisco DNA Center to dynamically discover and distribute services in the network. The global policy configuration can be easily adjusted to append more service types, add more SDG agent switches, or include more service peers and networks, as required. To implement intent-based service routing, you can configure the policy in any deployment model:

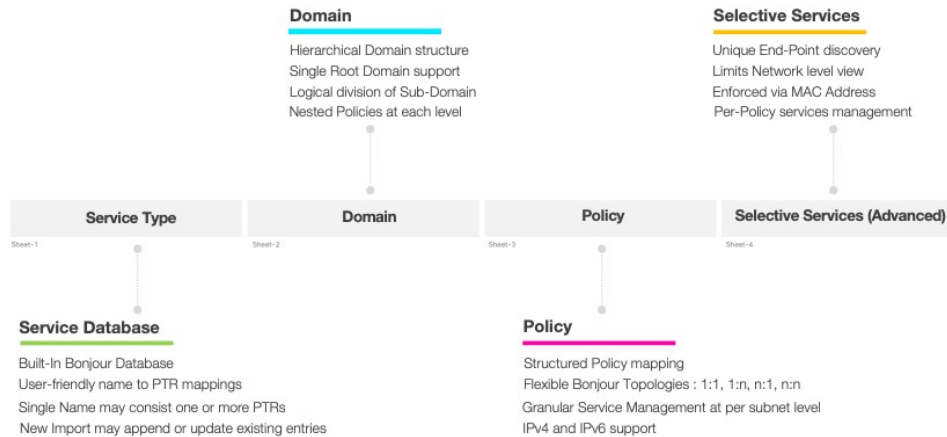
- **Point-to-point:** In this service routing topology, the single source SDG agent switch can be configured to discover service instances (such as *Printer*). Cisco DNA Center routes the printer information to a single remote query SDG agent upon receiving a query request. The global policy may contain advanced parameters from a selected SDG agent with extended network devices in a service peer role (such as a Cisco Catalyst 9800 Series Wireless Controller or Catalyst 9000 Switch). This policy configuration type limits printer from a single source SDG agent to a single query SDG agent, building a point-to-point routing topology.
- **Point-to-multipoint:** An expanded version of point-to-point routing topology with more than one query SDG agent device. This global policy setting provides the ability to route the service from a single source SDG agent to multiple remote SDG agent network devices upon receiving a query request.
- **Multipoint-to-multipoint:** An expanded version of point-to-point routing topology with more than one source SDG agent and query SDG agent. This global policy setting provides the ability to route a service from multiple source SDG agents to multiple remote SDG agent network devices upon receiving a query request.
- **Standalone:** This service routing topology enables Cisco DNA Center to discover the mDNS service instances from one or more source SDG agent switches. In this topology, the network administrator does not have to configure a query SDG agent. This type of configuration allows Cisco DNA Center to discover and manage SDG agent switches and services, but does not route the service to any SDG agent switches in the Wide Area Bonjour domain.

## Cisco Wide Area Bonjour Bulk Configuration

The Cisco Wide Area Bonjour application gives you the flexibility to build and manage service filter policies either individually through the GUI or in bulk during any stage of deployment. This section focuses on bulk provisioning and managing configuration files for backup.

The service filter policy configuration template is in Microsoft Excel XLS format. You can download a prebuilt structured and formatted blank XLS template file from the Cisco Wide Area Bonjour application either during the initial provisioning stage or during runtime from any level of the domain hierarchy, with an up-to-date configuration. The XLS template file is divided in four sheets, each cross-linked with required details to automate large-scale service filter policies.

**Figure 16: Cisco Wide Area Bonjour Policy Template**



The Cisco Wide Area Bonjour XLS template file contains predefined columns and column names that must remain intact. Changes in the predefined columns and names could result in a failure when importing the modified file. You must fill in the required data in the respective columns for each sheet based on the following reference configuration model.

The Selective Services sheet is optional and can be used in advanced service routing scenarios where service distribution from Cisco DNA Center must be limited to user-defined static MAC addresses. For example, if Cisco DNA Center discovers up to ten AirPrint-capable printers with Selective Services support, you can statically assign the MAC addresses of two printers to be shared if a source SDG agent receives a query from a query SDG agent.

This section provides reference template configuration values to build bulk service filter policy configuration parameters distributed across multiple worksheets.

The following table lists the parameters to be configured on the Service Type worksheet.

**Table 6: Cisco Wide Area Bonjour Policy - Service Type Sheet**

Parameter	Value	Description
Service Type Name	<User-defined service name>	Enter a user-defined service name to create a custom service type.
Bonjour Type	<Multicast DNS pointer records>	Enter one or more mDNS PTRs. Each PTR must end with a period (.) and each must be decoupled with a comma (,).

You must populate the Domain sheet to build the domain and subdomain hierarchy of the Cisco Wide Area Bonjour application. As initial configuration, the first entry must be configured with a root domain, followed by one or more subdomains, listed with the parent domain name as configured for root domain row. The

hierarchy can be expanded with additional subdomains as necessary, with appropriate parent subdomain names.

The following table lists the parameters to be configured on the Domain worksheet.

**Table 7: Cisco Wide Area Bonjour Policy - Domain Sheet**

Parameter	Value	Description
Domain-Name	<Root domain or subdomain name>	Enter the name of the root domain or subdomain.
Description	<Domain description>	(Optional) Enter a description for the domain.
Parent-Domain	<Root domain or subdomain name>	If the domain type in column A is root domain, leave this cell blank.  If the domain type in column A is subdomain, enter the name of the root domain or the subdomain to build the hierarchy.

You must populate the Policy sheet to build global service filter policy in the Cisco Wide Area Bonjour application. As described in the previous sections, the service filter configuration and management in the Cisco Wide Area Bonjour application is applied at a subdomain level. Thus, the Policy sheet refers to information provided in the previous two sheets as a prerequisite and associates new policy configurations to each domain.

**Table 8: Cisco Wide Area Bonjour Policy - Policy Sheet**

Parameter	Value	Description
Domain	<Root domain or subdomain>	Enter the name of the domain where this policy needs to be configured.
Service Type	<mDNS Service Type>	Enter one or more mDNS service types allowed for this policy. Each service type must be decoupled with a comma (,) delimiter.
Policy Name	<Policy Name>	Enter a unique name for the service policy.
Description	<Policy Description>	(Optional) Enter a description for the service policy.
Enabled	<True   False>	Enter True to enable the policy and False to disable the policy upon configuration.

Parameter	Value	Description
Deployment Type	<Traditional   Overlay>	Enter Traditional or Overlay deployment type. The Overlay deployment model is supported with BGP EVPN VXLAN.
Source IP	<Source SDG Agent IPv4 Address>	Enter the source SDG agent IPv4 address for Cisco DNA Center to build service routing adjacency and dynamically learn services.
Source Service Layer	<Local   Peer>	Enter Local or Peer depending on the service layer.  <b>Local:</b> SDG agent switch discovers mDNS service from directly attached providers.  <b>Peer:</b> SDG agent switch discovers mDNS services from downstream L2 switch or wireless controller device where providers are connected.
Source V4 Network	<Source IPv4 Network Address>	Enter the source IPv4 network address where the service provider is expected to announce services in the network.
Source V4 Mask	<Source IPv4 Network Mask>	Enter the source IPv4 network mask where the service provider is expected to announce the service in the network.
Source V6 Network	<Source IPv6 Network Address>	Enter the source IPv6 network address where the service provider is expected to announce the service in the network.
Source V6 Mask	<Source IPv6 Network Mask>	Enter the source IPv6 network mask, where the service provider is expected to announce the service in the network.
Source Peer ID	<Source Peer IPv4 Address>	If the source Service Layer is Peer, then enter the source IPv4 address of the L2 switch or wireless controller devices, where the providers are connected.
Source Location Group ID	<Source Location Group ID>	Enter the source location group ID. The valid range is from 0 to 4096.

Parameter	Value	Description
Source VNI ID	<Source EVPN Virtual Network ID>	If the Deployment Type is Overlay, then enter the source Layer 3 VNID or Layer 2 VNID where the service provider is expected to announce the service in the BGP EVPN overlay network.
Source IRB	<Symmetric IRB   Asymmetric IRB>	If the Deployment Type is Overlay, then enter the source SDG agent in Symmetric IRB (L3 Leaf) or Asymmetric IRB (L2 Leaf) mode where the service provider is expected to announce the service in the BGP EVPN overlay network.
Query IP	<Query SDG Agent IPv4 Address>	Enter the query SDG agent IPv4 address for Cisco DNA Center to build service routing adjacency and dynamically distribute services on request.
Query Service Layer	<Local   Peer>	Enter Local or Peer depending on the service layer.  <b>Local:</b> The SDG agent switch expects mDNS receiver endpoints from directly attached providers.  <b>Peer:</b> The SDG agent switch expects mDNS receiver endpoints connected to downstream L2 switch or wireless controller devices.
Query V4 Network	<Query IPv4 Network Address>	Enter the query IPv4 network address, where the endpoint receiver is expected to request the service in the network.
Query V4 Mask	<Query IPv4 Network Mask>	Enter the query IPv4 network mask, where the endpoint receiver is expected to request the service in the network.
Query V6 Network	<Query IPv6 Network Address>	Enter the query IPv6 network address where the endpoint receiver is expected to request the service in the network.
Query V6 Mask	<Query IPv6 Network Mask>	Enter the query IPv6 network mask where the endpoint receiver is expected to request the service in the network.

Parameter	Value	Description
Query Peer ID	<Query Peer IPv4 Address>	If the query Service Layer is Peer, enter the query IPv4 address of L2 switches or wireless controller devices where the mDNS receiver endpoints are connected.
Query Location Group ID	<Query Location Group ID>	Enter the query location group ID. The valid range is from 0 to 4096.
Query VNI ID	<Query EVPN Virtual Network ID>	If the Deployment Type is Overlay, enter the query Layer 3 VNID or Layer 2 VNID where the mDNS receiver endpoint is expected to request the service in the BGP EVPN overlay network.
Query IRB	<Symmetric IRB   Asymmetric IRB>	If the Deployment Type is Overlay, enter the query SDG agent in Symmetric IRB (L3 Leaf) or Asymmetric IRB (L2 Leaf) mode where the service provider is expected to request the service in the BGP EVPN overlay network.

The Advanced Services sheet is an optional sheet, used to configure advanced service distribution to querying SDG agents. As the network administrator, you can restrict the distribution of service instances based on matching policy names and the MAC addresses of service provider Bonjour endpoints.

The following table lists the parameters on the Selective Service sheet.

**Table 9: Cisco Wide Area Bonjour Policy - Selective Service Sheet**

Parameter	Value	Description
Policy Name	<Policy Name>	Enter the policy name as applied in the Policy worksheet to enable selective service instance distribution instead of all from the configured network.
Source MAC Address	<Service Provider MAC Address>	Enter a single MAC address in the format 00:00:00:00:00:00 associated with the policy. For another MAC address entry, use another row.

## Manage the Cisco Wide Area Bonjour Configuration

The Cisco Wide Area Bonjour application provides flexibility in managing bulk configuration with Import and Export capabilities. The application domain and policies can be built and imported as initial Day-0



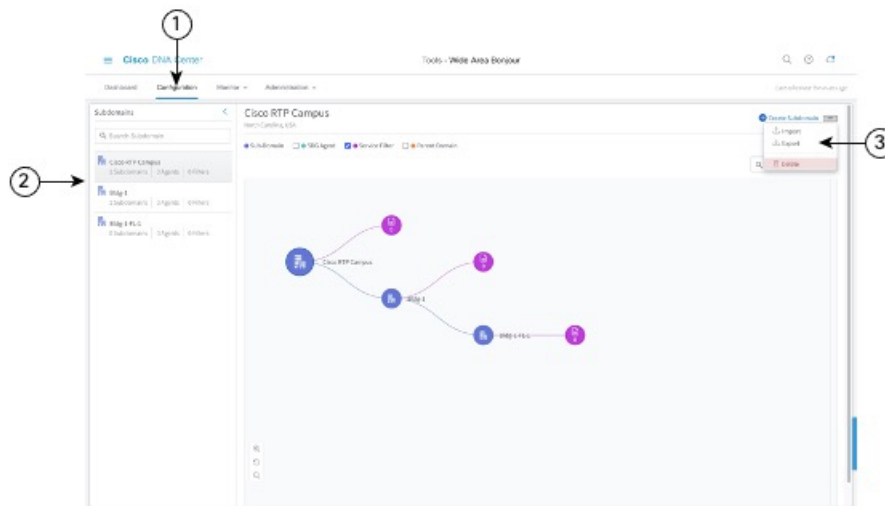
configuration for bulk provisioning instead of the manual process. The existing policy configuration can be downloaded to a local computer in an XLS format to either update existing policies or maintain a backup.

The policy configuration import is seamless in operation and can be appended to the Cisco Wide Area Bonjour application while it is operational. The new imported file may include new service-types in a database, additional services to existing policies, or new subdomains with new policies. During configuration import the application and service-peering with existing SDG agents remains intact providing non-disruptive bulk provisioning capabilities to scale up the network and services in the Wide Area Bonjour domain. You can import your configuration at any level of the domain hierarchy of the application.

The export function downloads a snapshot of the latest configuration from the Cisco Wide Area Bonjour application to a local computer. The file downloaded from the export function can be used as a configuration backup which you can later restore, if necessary.

The following figure is a screenshot illustrating the steps to be followed to either import or export the bulk configuration XLS file.

**Figure 17: Steps to Import or Export the Bulk Configuration XLS File**



- 
- Step 1** Navigate to the **Configuration** tab.
  - Step 2** From the left pane, select the domain or subdomain for which you want to import or export the bulk configuration XLS file.
  - Step 3** Click the menu button in the upper-right portion of the screen.
  - Step 4** Click **Import** to upload your configuration to the Cisco Wide Area Bonjour application from your local computer. Alternatively, click **Export** to download the configuration file from the Cisco Wide Area Bonjour application to your local computer.
-





## CHAPTER 5

# Deploy Wide Area Bonjour on Traditional Networks

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- [About Wide Area Bonjour on Traditional Networks, on page 35](#)
- [Traditional LAN and Wireless Local Mode, on page 35](#)
- [Traditional LAN and Wireless FlexConnect Local Switching Mode, on page 38](#)
- [Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Switch, on page 42](#)
- [Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Access Points, on page 45](#)
- [Traditional Routed Access LAN and Wireless Local Mode, on page 48](#)
- [Traditional Routed Access LAN, on page 52](#)

## About Wide Area Bonjour on Traditional Networks

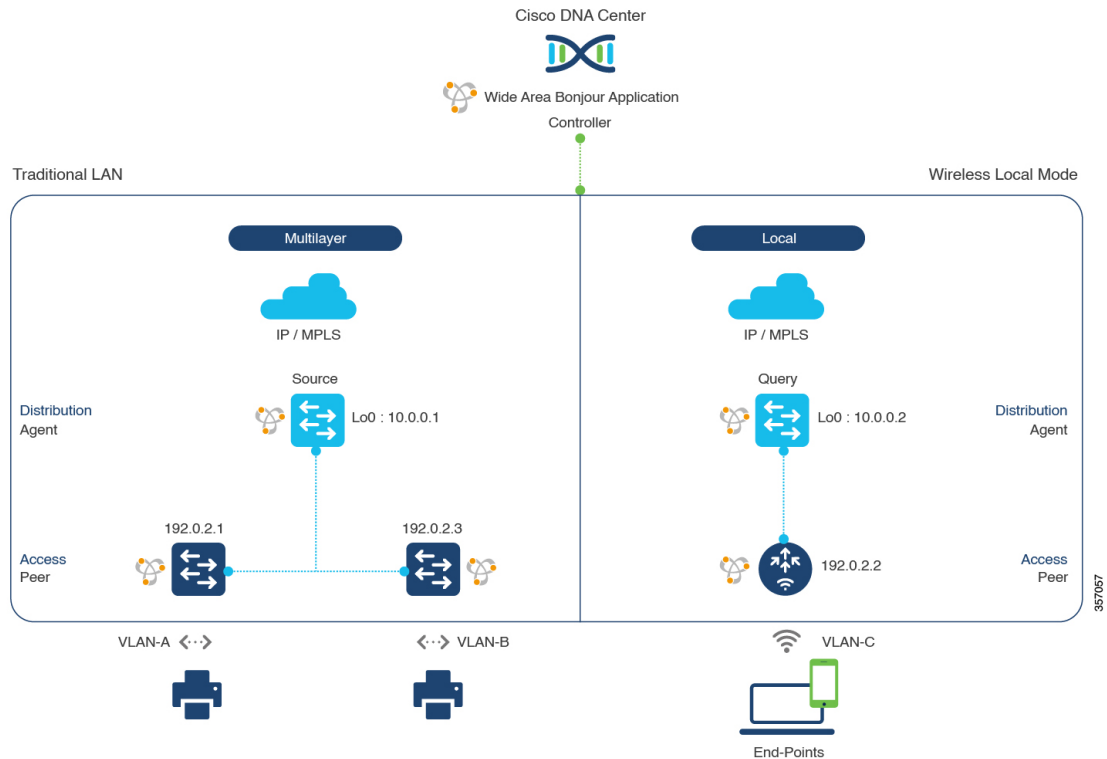
Cisco DNA Service for Bonjour supports various types of traditional wired and wireless LAN network deployment models. This chapter lists configuration instructions to implement global service filter policies in the Cisco Wide Area Bonjour application, enabling network-wide service-routing functions between various supporting deployment models.

## Traditional LAN and Wireless Local Mode

This section provides guidelines to create a global configuration policy that enables Wide Area Bonjour within a traditional LAN, providing Bonjour services (such as wired printers) to wireless users connected over wireless networks with Cisco Wireless Access Points in local mode.

The following figure illustrates example network topologies for traditional LAN and wireless local-mode networks with Bonjour source and receiver agents across IP networks.

Figure 18: Traditional LAN and Wireless Local Mode Network Service Routing



**Note** The Cisco Catalyst 9800 Series Wireless Controller with access-point in FlexConnect Central Switching mode follows the same configuration steps described in this section.

For more information about the Cisco Catalyst 9800 Series Wireless Controller configuration guidelines, see the [Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide, Cisco IOS XE Amsterdam 17.3.x](#).

## Configure Service Filters for Traditional LAN and Wireless Local Mode

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted Cisco Catalyst SDG agent switches across your IP network.

- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
  - Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
  - Step 3** Ensure that the **Service Filter** box is checked.
  - Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain.
- You can also manually edit existing service filters from this list.

- Step 5** Click **Create Service Filter**.
- Step 6** From the **Network Mode** drop-down list, choose **Traditional** (the default mode).
- Step 7** Enter a unique name for the service filter.
- Step 8** (Optional) Enter a description for the service filter.
- Step 9** Select one or more service types to permit announcements and queries.
- Step 10** Enable or disable service filters after creating them. By default, they are enabled.
- 

## Configure Source SDG Agents in Traditional LAN and Wireless Local Mode

This section lists additional configuration steps to enable discovering wired printer sources from the LAN Distribution switches paired with Layer 2 Catalyst Switches in a service peer role. The wireless distribution switches paired with a Cisco Catalyst 9800 Series Wireless Controller in a service peer role receive query responses for wired printers and distribute the responses to querying devices over the wireless local mode network.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, the service can't be distributed across the IP network without configuring a query agent. For the steps to configure a query SDG agent, see [Configure Query SDG Agents in Traditional LAN and Wireless Local Mode, on page 38](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for Traditional LAN and Wireless Local Mode, on page 36](#).

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.1) which announces the services (for example, printer).
- Step 4** From the **Service Layer** drop-down list, choose **Peer**.
- Step 5** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 6** Select the source VLAN (Vlan-A and Vlan-B) to discover services (printer) from a specific network.
- Step 7** Enable or disable a service from a selected IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable a service from a selected IPv6 subnet. By default, this is enabled.
- Step 9** Enter the service peer IPv4 address (192.0.2.1). Click the plus icon to add more peers (192.0.2.3). Select **Any** to accept services from any peer on the selected VLAN.
- Step 10** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 11** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)
- Step 12** Click **DONE**.

**Step 13** Click **CREATE**.

---

## Configure Query SDG Agents in Traditional LAN and Wireless Local Mode

This section lists the additional configuration steps to distribute services to query SDG agents, based on a policy.

For instructions to configure a source SDG agent, see [Configure Source SDG Agents in Traditional LAN and Wireless Local Mode, on page 37](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for Traditional LAN and Wireless Local Mode, on page 36](#).

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a query SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.2) that receives queries for the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Peer**.
- Step 5** Ensure that the **Any** check box is unchecked. By default, this is enabled.
- Step 6** Select the query VLAN (Vlan-C) to distribute services (printer) to a specific network.
- Step 7** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.
- Step 9** Enter the service peer IPv4 address (192.0.2.2).
- Step 10** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 11** Click the plus icon to add more service-peers (192.0.2.4). Select **Any** to accept services from any peer on a selected VLAN.
- Step 12** (Optional) Click **Add Next** to add more query agents. (Repeat the preceding steps.)
- Step 13** Click **DONE**.
- Step 14** Click **CREATE**.
- 

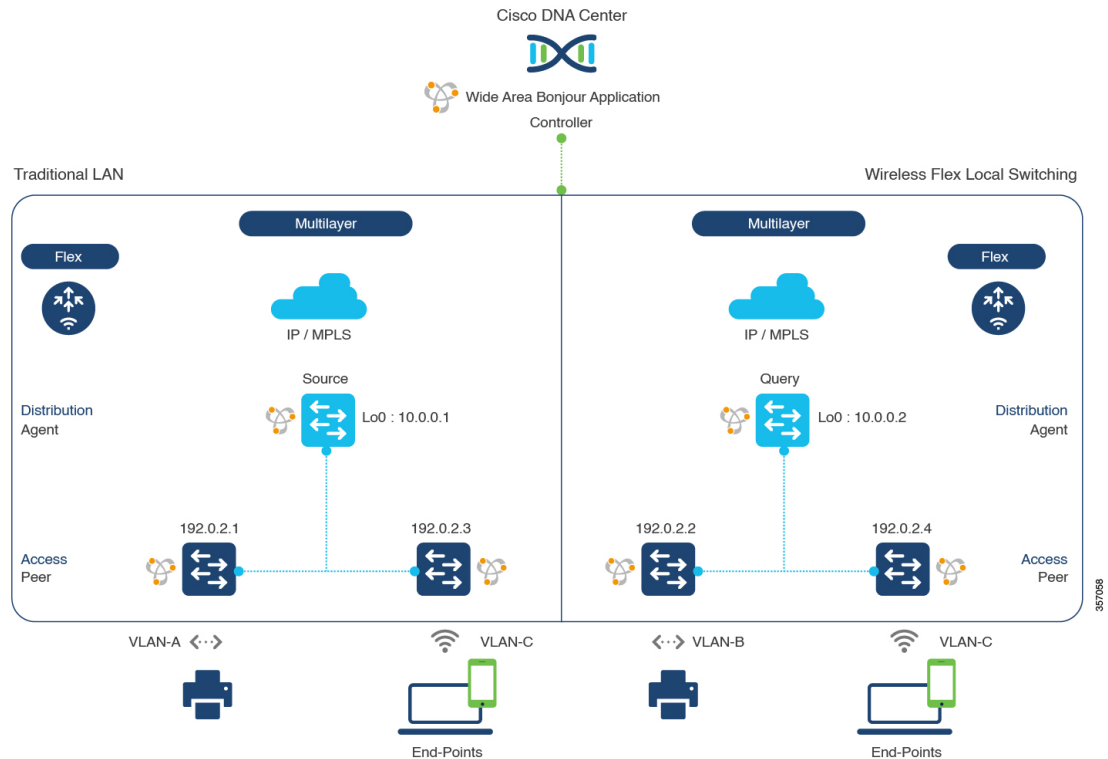
## Traditional LAN and Wireless FlexConnect Local Switching Mode

This section provides step-by-step global configuration policy guidelines to enable Wide Area Bonjour over traditional LAN, which provide Bonjour services (such as wired printers) to local or remotely attached wireless

users connected over wireless networks with Cisco Wireless Access Points in FlexConnect Local Switching mode.

The following figure illustrates a reference network topology for traditional LAN and wireless FlexConnect Local Switching mode networks with Bonjour source and receiver SDG agents across IP networks.

**Figure 19: Traditional LAN and Wireless FlexConnect Local Switching Network Service Routing**



**Note** Cisco Catalyst 9800 Series Wireless Controller with FlexConnect Access Point in Local Switching mode doesn't require mDNS configuration settings.

For more information about the Cisco Catalyst 9800 Series Wireless Controller configuration guidelines, see [Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide, Cisco IOS XE Amsterdam 17.3.x](#).

## Configure Service Filters for Traditional LAN and Wireless FlexConnect Local Switching Mode

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted Cisco Catalyst SDG agent switches across your IP network.

**Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.

- Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
- Step 3** Ensure that the **Service Filter** box is checked.
- Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain.  
You can also manually edit existing service filters from this list.
- Step 5** Click **Create Service Filter**.
- Step 6** From the **Network Mode** drop-down list, choose **Traditional** (the default mode).
- Step 7** Enter a unique name for the service filter.
- Step 8** (Optional) Enter a description for the service filter.
- Step 9** Select one or more service types to permit announcements and queries.
- Step 10** Enable or disable service filters after creating them. By default, they are enabled.

## Configure Source SDG Agents in Traditional LAN and Wireless FlexConnect Local Switching Mode

This section lists the common configuration steps to enable discovering wired printer sources from the LAN Distribution Block-1 switches paired with Layer 2 Catalyst switches in a service-peer role. The LAN Distribution Block-2 switches are paired with another pair of Catalyst switches in a service peer role.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, the services can't be distributed across an IP network without configuring a query agent. For steps to configure a query SDG agent, see [Configure Query SDG Agents in Traditional LAN and Wireless FlexConnect Local Switching Mode, on page 41](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for Traditional LAN and Wireless FlexConnect Local Switching Mode, on page 39](#).

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.1) that announces the services (Printer).
- Step 4** From the **Service Layer** drop-down list, choose **Peer**.
- Step 5** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 6** Select the source VLAN (Vlan-A) to discover services (Printer) from a specific network.
- Step 7** Enable or disable a service from a selected IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable a service from a selected IPv6 subnet. By default, this is enabled.
- Step 9** Enter the service peer IPv4 address (192.0.2.1). Click the plus icon to add more peers (192.0.2.3). Select **Any** to accept services from any peer on the selected VLAN.
- Step 10** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.



- To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.

**Step 11** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)

**Step 12** Click **DONE**.

**Step 13** Click **CREATE**.

---

## Configure Query SDG Agents in Traditional LAN and Wireless FlexConnect Local Switching Mode

This section lists the additional configuration steps to distribute services to query SDG agents, based on a policy.

For instructions to configure a source SDG agent, see [Configure Source SDG Agents in Traditional LAN and Wireless FlexConnect Local Switching Mode, on page 40](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for Traditional LAN and Wireless FlexConnect Local Switching Mode, on page 39](#).

---

**Step 1** Click **Add** in the upper-right corner of the window.

**Step 2** Click the radio button to select a query SDG agent. By default, the source radio button is selected.

**Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.2) that receives queries for the services (printer).

**Step 4** From the **Service Layer** drop-down list, choose **Peer**.

**Step 5** Ensure that the **Any** check box is unchecked. By default, this is enabled.

**Step 6** Select the query VLAN (Vlan-C) to distribute services (printer) to a specific network.

**Step 7** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.

**Step 8** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.

**Step 9** Enter the service peer IPv4 address (192.0.2.2).

**Step 10** For **Location Group**, do one of the following:

- To accept services from any location group, check the check box.
- To accept services from location group 0, choose **Default** from the drop-down list.
- To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.

**Step 11** Click the plus icon to add more service peers (192.0.2.4). Select **Any** to accept services from any peer on a selected VLAN.

**Step 12** (Optional) Click **Add Next** to add more query agents. (Repeat the preceding steps.)

**Step 13** Click **DONE**.

**Step 14** Click **CREATE**.

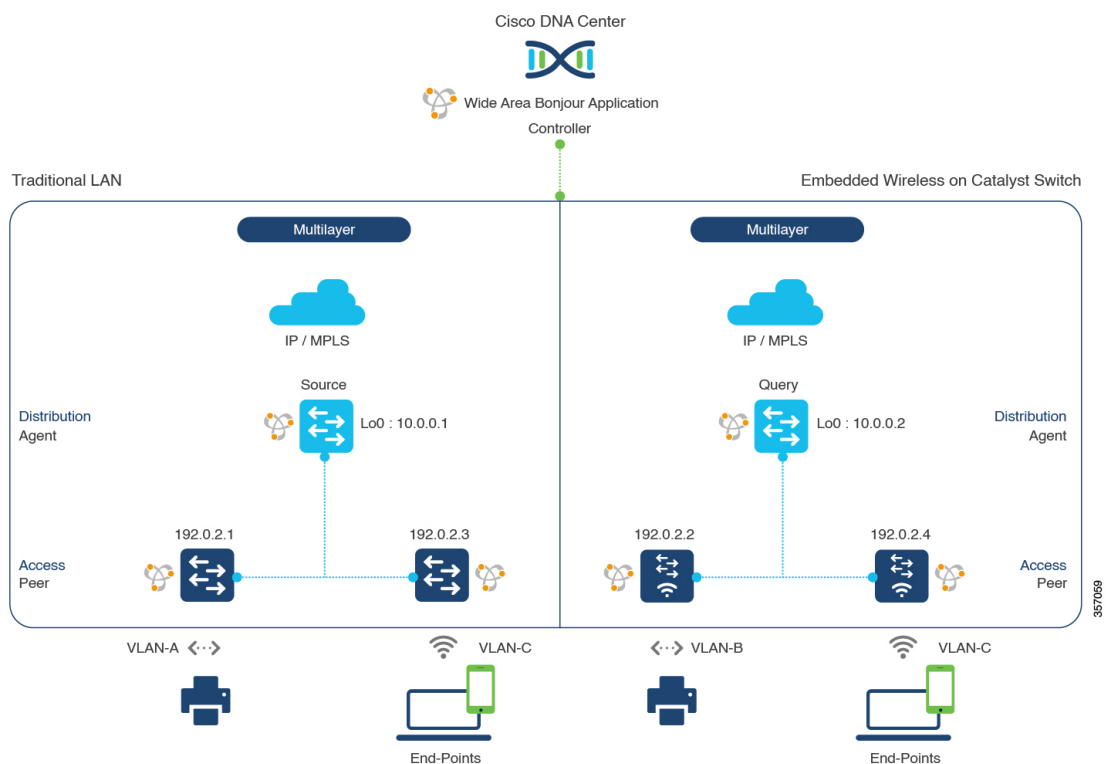
---

# Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Switch

This section provides step-by-step global configuration policy guidelines to enable Cisco Wide Area Bonjour between Cisco Catalyst 9300 series switches with Embedded Wireless Controller (EWC) function. The traditional LAN providing Bonjour services, such as wired printers to the local or remote attached wireless users connected wireless networks with Cisco Wireless Access Points in Local mode.

The following figure illustrates reference network topologies for traditional LAN and wireless Local mode networks with Bonjour source and receiver across IP networks.

**Figure 20: Traditional LAN and EWC on Switch Service Routing**



For more information about the Cisco Catalyst 9300 series switch configuration guidelines, see the [Software Configuration Guide, Cisco IOS XE Amsterdam 17.3.x \(Catalyst 9300 Switches\)](#).

## Configure Service Filters for a Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Switch

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted Cisco Catalyst SDG agent switches across your IP network.

- 
- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
- Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
- Step 3** Ensure that the **Service Filter** box is checked.
- Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain.  
You can also manually edit existing service filters from this list.
- Step 5** Click **Create Service Filter**.
- Step 6** From the **Network Mode** drop-down list, choose **Traditional** (the default mode).
- Step 7** Enter a unique name for the service filter.
- Step 8** (Optional) Enter a description for the service filter.
- Step 9** Select one or more service types to permit announcements and queries.
- Step 10** Enable or disable service filters after creating them. By default, they are enabled.
- 

## Configure Source SDG Agents in Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Switch

This section lists additional configuration steps to enable discovering wired printer sources from the LAN Distribution Block-1 switches paired with Layer 2 Catalyst Switches in a service-peer role. The LAN Distribution Block-2 switches are paired with another pair of Catalyst switches in a service peer role.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, it can't be distributed across an IP network without configuring a query agent. For instructions to configure a query SDG agent, see [Configure Query SDG Agents in Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Switch](#), on page 44.

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for a Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Switch](#), on page 42.

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a source SDG agent. By default, this box is unchecked.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.1) that announces the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Peer**.
- Step 5** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 6** Select the source VLAN (Vlan-A) to discover services (printer) from a specific network.
- Step 7** Enable or disable a service from a selected source IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable a service from a selected source IPv6 subnet. By default, this is enabled.
- Step 9** Enter the service peer IPv4 address (192.0.2.1). Click the plus icon to add more peers (192.0.2.3). Select **Any** to accept services from any peer on the selected VLAN.
- Step 10** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.

- To accept services from location group 0, choose **Default** from the drop-down list.
- To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.

**Step 11** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)

**Step 12** Click **DONE**.

**Step 13** Click **CREATE**.

## Configure Query SDG Agents in Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Switch

This section lists the additional configuration steps to distribute services to query SDG agents, based on a policy.

For instructions to configure a source SDG agent, see [Configure Source SDG Agents in Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Switch](#), on page 43.

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for a Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Switch](#), on page 42.

**Step 1** Click **Add** in the upper-right corner of the window.

**Step 2** Click the radio button to select a query SDG agent. By default, the source radio button is selected.

**Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.2) that receives queries for the service type (printer).

**Step 4** From the **Service Layer** drop-down list, choose **Peer**.

**Step 5** Ensure that the **Any** check box is unchecked. By default, this check box is unchecked.

**Step 6** Select the query VLAN (Vlan-C) to distribute services (printer) to a specific network.

**Step 7** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.

**Step 8** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.

**Step 9** Enter the service peer IPv4 address (192.0.2.2).

**Step 10** Click the plus icon to add more service peers (192.0.2.4). Select **Any** to accept services from any peer on a selected VLAN.

**Step 11** For **Location Group**, do one of the following:

- To accept services from any location group, check the check box.
- To accept services from location group 0, choose **Default** from the drop-down list.
- To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.

**Step 12** (Optional) Click **Add Next** to add more query agents. (Repeat the preceding steps.)

**Step 13** Click **DONE**.

**Step 14** Click **CREATE**.

**What to do next**

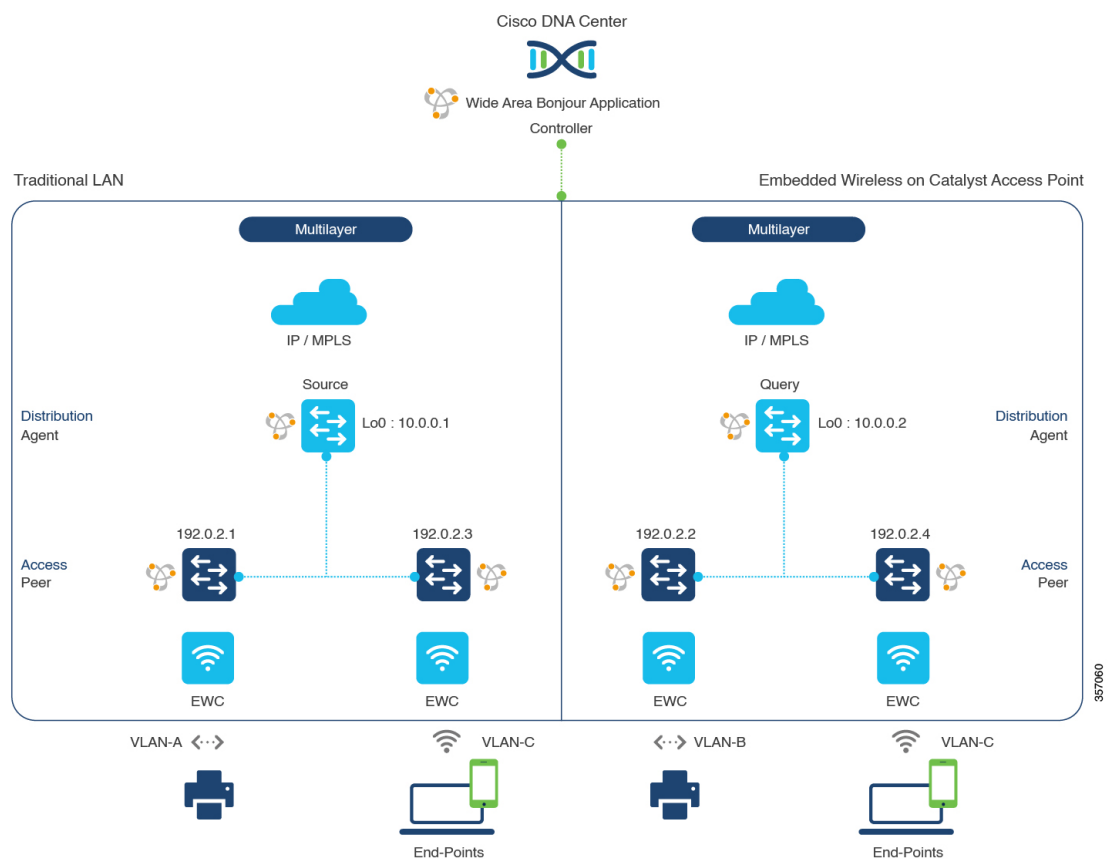
Create a new reverse service filter configuration to permit Printer service discovery from source 10.0.0.2 and peer 192.0.2.2, and distribute the service to remote querying SDG agent 10.0.0.1 and wireless users connected to the peer 192.0.2.3.

## Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Access Points

This section provides step-by-step global configuration policy guidelines to enable Wide Area Bonjour between devices on a traditional LAN network providing Bonjour services (such as wired printers) to local or remotely connected wired and wireless users. The Bonjour gateway on the Catalyst switch supports controller-less Wireless networks with Embedded Wireless Controller (EWC) function on the Catalyst Access Points.

The following figure illustrates reference network topologies for traditional LAN and EWC Catalyst Access Points with Bonjour source and receiver across IP networks.

**Figure 21: Traditional LAN and EWC - Catalyst Access Point Network Service Routing**



**Note** The older access point in Mobility Express mode follows the same configuration steps described in this section.

For more information about the Cisco Catalyst Access Point series EWC configuration guidelines, see the [Cisco Embedded Wireless Controller on Cisco Catalyst Access Points](#).

## Configure Service Filters for a Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Access Points

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted Cisco Catalyst SDG agent switches across your IP network.

- 
- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
  - Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
  - Step 3** Ensure that the **Service Filter** box is checked.
  - Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain.  
You can also manually edit existing service filters from this list.
  - Step 5** Click **Create Service Filter**.
  - Step 6** From the **Network Mode** drop-down list, choose **Traditional** (the default mode).
  - Step 7** Enter a unique name for the service filter.
  - Step 8** (Optional) Enter a description for the service filter.
  - Step 9** Select one or more service types to permit announcements and queries.
  - Step 10** Enable or disable service filters after creating them. By default, they are enabled.
- 

## Configure Source SDG Agents in Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Access Points

This section provides guidelines for additional configuration steps in global policies to enable discovering wired printer sources from the LAN distribution switches paired with Layer 2 Cisco Catalyst switches in a service peer role. The EWC - Catalyst Access Point can receive query responses for local and remote wired printers when browsed over wireless networks.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, the services can't be distributed across the IP network unless the query agent is configured. For instructions to configure a query SDG agent, see [Configure Query SDG Agents in Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Access Points, on page 47](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for a Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Access Points, on page 46](#).

- 
- Step 1** Click **Add** in the upper-right corner of the window.
  - Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.

- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.1) that announces the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Peer**.
- Step 5** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 6** Select the source VLAN (Vlan-A) to discover services (printer) from a specific network.
- Step 7** Enable or disable a service from a selected IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable a service from a selected IPv6 subnet. By default, this is enabled.
- Step 9** Enter the service peer IPv4 address (192.0.2.1).
- Step 10** Click the plus icon to add more peers (192.0.2.3). Select **Any** to accept services from any peer on the selected VLAN.
- Step 11** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 12** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)
- Step 13** Click **DONE**.
- Step 14** Click **CREATE**.
- 

## Configure Query SDG Agents in Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Access Points

This section lists the additional configuration steps to distribute services to query SDG agents, based on a policy.

For instructions to configure a source SDG agent, see [Configure Source SDG Agents in Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Access Points, on page 46](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for a Traditional LAN and Wireless Embedded Wireless Controller - Catalyst Access Points, on page 46](#).

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a query SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.2) that receives queries for the service type (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Peer**.
- Step 5** Ensure that the **Any** check box is unchecked. By default, this check box is unchecked.
- Step 6** Select the query VLAN (Vlan-C) to distribute services (printer) to a specific network.
- Step 7** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.
- Step 9** Enter the service peer IPv4 address (192.0.2.2).

- Step 10** Click the plus icon to add more service peers (192.0.2.4). Select **Any** to accept services from any peer on a select VLAN.
- Step 11** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 12** (Optional) Click **Add Next** to add more query agents. (Repeat the preceding steps.)
- Step 13** Click **DONE**.
- Step 14** Click **CREATE**.
- 

#### What to do next

Create a new reverse service filter configuration to permit Printer service discovery from source 10.0.0.2 and peer 192.0.2.2 and enable distribution to remote querying SDG agent 10.0.0.1 and wireless users connected to peer 192.0.2.3.

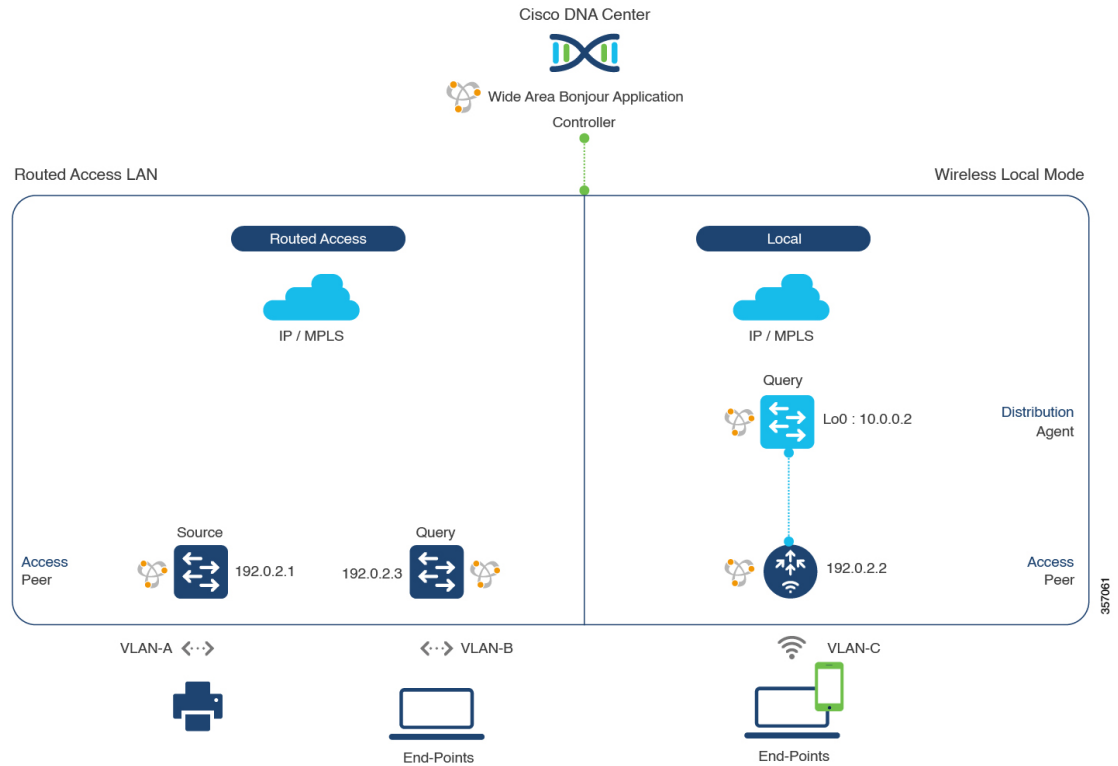
## Traditional Routed Access LAN and Wireless Local Mode

This section provides step-by-step global configuration policy guidelines to enable Wide Area Bonjour between devices on Routed Access LAN networks, providing Bonjour services (such as wired printers) to remotely connected wired users and wireless users connected over wireless networks with Cisco Wireless Access Points in Local mode.

The following figure illustrates a reference network topology for Routed Access LAN and wireless Local mode networks with Bonjour source and receiver devices across IP networks.



Figure 22: Routed Access LAN and Wireless Local Mode Network Service Routing



**Note** Use the configuration steps described in this section for Cisco Catalyst 9800 Series Wireless Controller with access points in FlexConnect Central Switching mode.

For more information about the Cisco Catalyst 9800 Series Wireless Controller configuration guidelines, see the [Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide, Cisco IOS XE Amsterdam 17.3.x](#).

## Configure Service Filters for a Traditional Routed Access LAN and Wireless Local Mode

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted Cisco Catalyst SDG agent switches across your IP network.

- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
- Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
- Step 3** Ensure that the **Service Filter** box is checked.
- Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain.

You can also manually edit existing service filters from this list.

- Step 5** Click **Create Service Filter**.
- Step 6** From the **Network Mode** drop-down list, choose **Traditional** (the default mode).
- Step 7** Enter a unique name for the service filter.
- Step 8** (Optional) Enter a description for the service filter.
- Step 9** Select one or more service types to permit announcements and queries.
- Step 10** Enable or disable service filters after creating them. By default, they are enabled.

## Configure Source SDG Agents in Traditional Routed Access LAN and Wireless Local Mode

This section lists guidelines for additional configuration steps to enable discovering wired printer sources from LAN switch-1 in an SDG agent role. The wired printer can be discovered by remotely connected wired users from LAN switch-2, and to wireless users from WLAN Distribution Block-2 switches paired with a Cisco Catalyst 9800 Series Wireless Controller in a service peer role.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, it can't be distributed across the IP network unless you configure a query SDG agent. For steps to configure a query SDG agent, see [Configure Query SDG Agents for Traditional Routed Access LAN and Wireless Local Mode](#), on page 51.

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for a Traditional Routed Access LAN and Wireless Local Mode](#), on page 49.

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.1) that announces the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Local**.
- Step 5** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 6** Select the source VLAN (Vlan-A) to discover services (Printer) from a specific network.
- Step 7** Enable or disable a service from a selected source IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable a service from a selected source IPv6 subnet. By default, this is enabled.
- Step 9** For **Location Group**, do one of the following:
  - To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 10** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)
- Step 11** Click **DONE**.

**Step 12** Click **CREATE**.

---

## Configure Query SDG Agents for Traditional Routed Access LAN and Wireless Local Mode

This section lists the additional configuration steps to distribute services to query SDG agents, based on a policy.

For instructions to configure a source SDG agent, see [Configure Source SDG Agents in Traditional Routed Access LAN and Wireless Local Mode, on page 50](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for a Traditional Routed Access LAN and Wireless Local Mode, on page 49](#).

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a query SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.3) that receives queries for the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Local**.
- Step 5** Ensure that the **Any** check box is unchecked. By default, this is enabled.
- Step 6** Select the query VLAN (Vlan-B) to distribute services (printer) to a specific network.
- Step 7** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.
- Step 9** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 10** Click **Add Next**.
- Step 11** From the **SDG Agent/IP** drop-down list, choose a query SDG agent (10.0.0.2).
- Step 12** From the **Service Layer** drop-down list, choose **Peer**.
- Step 13** Ensure that the **Any** check box is unchecked. By default, this is enabled.
- Step 14** Select the query VLAN (Vlan-C) to distribute services (printer) to a specific network.
- Step 15** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.
- Step 16** Enable or disable services from the selected IPv6 subnet. By default, this is enabled.
- Step 17** Enter the service peer IPv4 address (192.0.2.2).
- Step 18** Click the plus icon to add more service-peers (192.0.2.4). Select **Any** to accept services from any peer on a selected VLAN.
- Step 19** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.

- To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.

**Step 20** (Optional) Click **Add Next** to add more query agents. (Repeat the preceding steps.)

**Step 21** Click **DONE**.

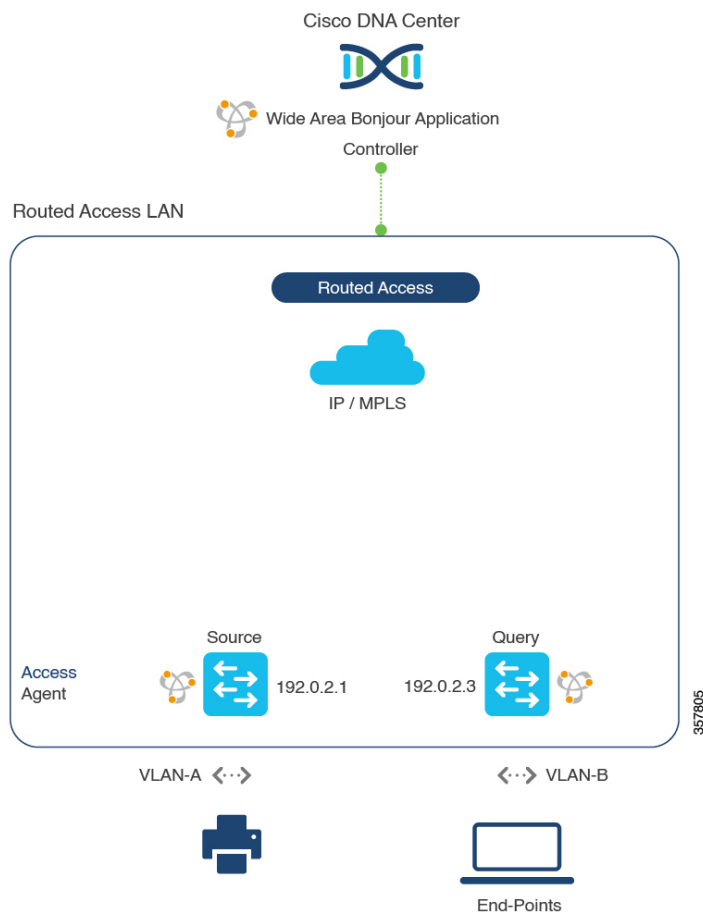
**Step 22** Click **CREATE**.

## Traditional Routed Access LAN

This section provides step-by-step global configuration policy guidelines to enable Wide Area Bonjour between devices on Routed Access LAN networks, providing Bonjour services (such as wired printers) to remotely connected wired users and wireless users.

The following figure illustrates a reference network topology for Routed Access LAN networks with Bonjour source and receiver devices across IP networks.

**Figure 23: Traditional Routed Access LAN Service Routing**





**Note** Use the configuration steps described in this section for Cisco Nexus switches.

For more information about the Cisco Nexus switches configuration guidelines, see the [Cisco DNA Service For Bonjour Configuration Guide, Cisco Nexus 9000 Series NX-OS, Release 10.2\(3\)F](#).

## Configure Service Filters for Traditional Routed Access LAN

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted SDG agent switches across your IP network.

- 
- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
  - Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
  - Step 3** Ensure that the **Service Filter** box is checked.
  - Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain.  
You can also manually edit existing service filters from this list.
  - Step 5** Click **Create Service Filter**.
  - Step 6** From the **Network Mode** drop-down list, choose **Traditional** (the default mode).
  - Step 7** Enter a unique name for the service filter.
  - Step 8** (Optional) Enter a description for the service filter.
  - Step 9** Select one or more service types to permit announcements and queries.
  - Step 10** Enable or disable service filters after creating them. By default, they are enabled.
- 

## Configure Source SDG Agents in Traditional Routed Access LAN

This section lists guidelines for additional configuration steps to enable discovering wired printer sources from LAN switch-1 in an SDG agent role. The wired printer can be discovered by remotely connected wired users from LAN switch-2.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, it can't be distributed across the IP network unless you configure a query SDG agent. For steps to configure a query SDG agent, see [Configure Query SDG Agents in Traditional Routed Access LAN, on page 54](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for Traditional Routed Access LAN, on page 53](#).

- 
- Step 1** Click **Add** in the upper-right corner of the window.
  - Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.

- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.1) that announces the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Local**.
- Step 5** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 6** Select the source VLAN (Vlan-A) to discover services (Printer) from a specific network.
- Step 7** Enable or disable a service from a selected source IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable a service from a selected source IPv6 subnet. By default, this is enabled.
- Step 9** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 10** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)
- Step 11** Click **DONE**.
- Step 12** Click **CREATE**.
- 

## Configure Query SDG Agents in Traditional Routed Access LAN

This section lists the additional configuration steps to distribute services to query SDG agents, based on a policy.

For instructions to configure a source SDG agent, see [Configure Source SDG Agents in Traditional Routed Access LAN, on page 53](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for Traditional Routed Access LAN, on page 53](#).

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a query SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.3) that receives queries for the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Local**.
- Step 5** Ensure that the **Any** check box is unchecked. By default, this is enabled.
- Step 6** Select the query VLAN (Vlan-B) to distribute services (printer) to a specific network.
- Step 7** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.
- Step 9** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 10** (Optional) Click **Add Next** to add more query agents. (Repeat the preceding steps.)

**Step 11** Click **DONE**.

**Step 12** Click **CREATE**.

---







## CHAPTER 6

# Deploy Wide Area Bonjour on Cisco SD-Access Networks

---

- [About Wide Area Bonjour on Cisco SD-Access Networks, on page 57](#)
- [Cisco SD-Access LAN and Wireless Fabric Mode, on page 57](#)
- [Cisco SD-Access with Policy Extended Node LAN and Wireless Local Mode, on page 61](#)
- [Cisco SD-Access with Policy Extended Node LAN and Wireless FlexConnect Local Switching Mode, on page 64](#)

## About Wide Area Bonjour on Cisco SD-Access Networks

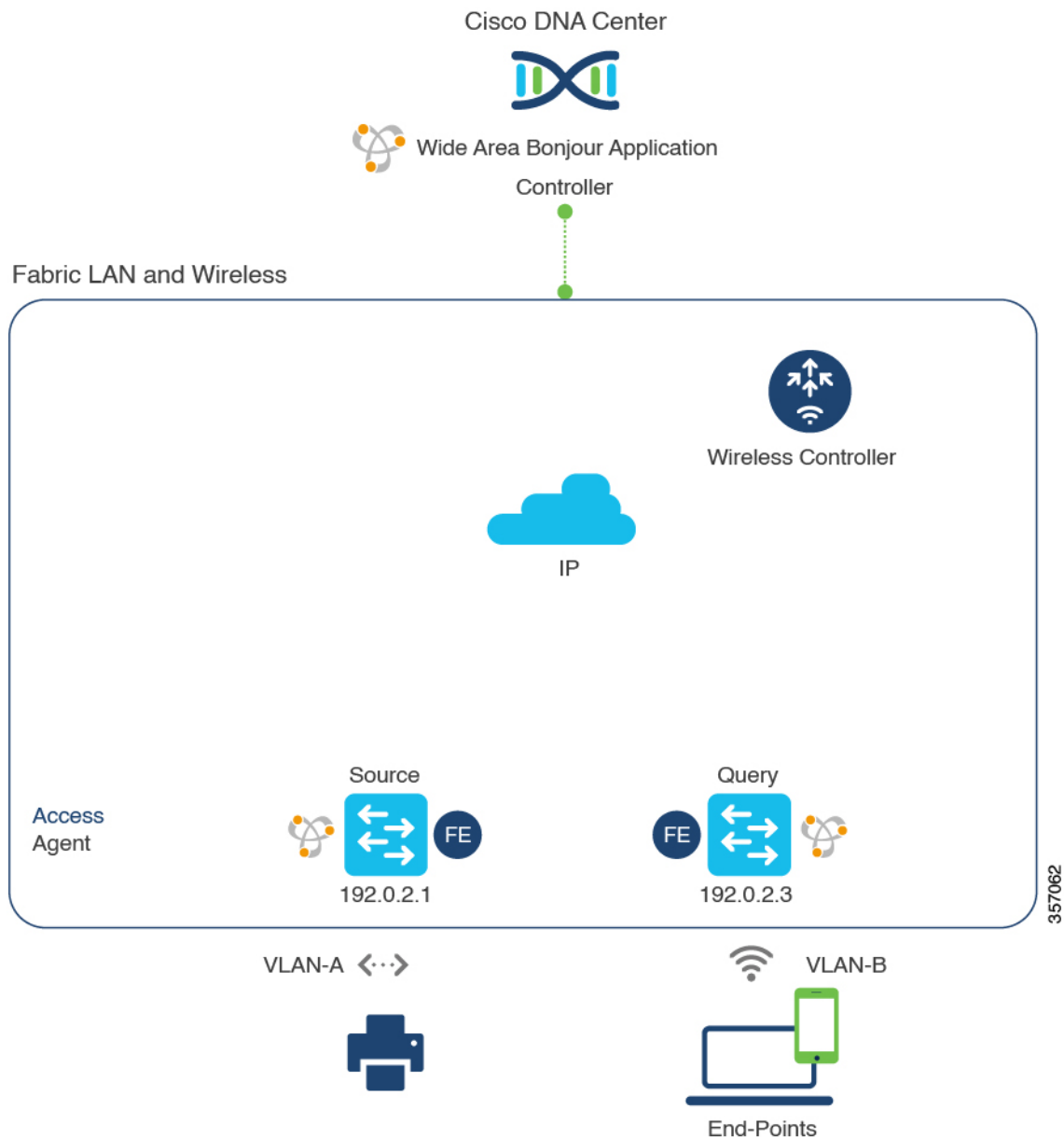
The Cisco Wide Area Bonjour application supports various types of Cisco SD-Access wired and wireless LAN network deployment models. This chapter provides step-by-step instructions to implement global service filter policies in the Cisco Wide Area Bonjour application, enabling network-wide service routing functions for virtual network environments, without extending the Layer 2 flood boundary.

## Cisco SD-Access LAN and Wireless Fabric Mode

This section provides step-by-step global configuration policy guidelines to enable Wide Area Bonjour between Fabric-Edge LAN switches providing Bonjour services, such as wired printers to remotely connected wireless users connected over Fabric-enabled wireless networks.

The following figure shows a reference network topology for Cisco SD-Access LAN and Fabric mode wireless networks with Bonjour source and receiver in virtual network environments.

Figure 24: Cisco SD-Access LAN and Fabric-Enabled Wireless Virtual Network Service Routing



For more information about the Cisco Catalyst 9800 Series Wireless Controller, see the [Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide, Cisco IOS XE Amsterdam 17.3.x](#).

## Create Service Filters for Cisco SD-Access LAN and Wireless Fabric Mode

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted Cisco Catalyst SDG agent switches across IP networks.

- 
- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
- Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
- Step 3** Ensure that the **Service Filter** box is checked.
- Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain.  
You can also manually edit existing service filters from this list.
- Step 5** Click **Create Service Filter**.
- Step 6** From the **Network Mode** drop-down list, choose **Traditional** (the default mode).
- Step 7** Enter a unique name for the service filter.
- Step 8** (Optional) Enter a description for the service filter.
- Step 9** Select one or more service types to permit announcements and queries.
- Step 10** Enable or disable service filters after creating them. By default, the service filters are enabled.
- 

## Configure Source SDG Agents in Cisco SD-Access LAN and Wireless Fabric Mode

This section lists the additional configuration steps to enable discovering wired printer sources from the LAN Fabric-Edge Switch-1 in an SDG agent role. The wired printer can be discovered by remotely connected wireless users from the Fabric-Edge LAN Switch-2 in an SDG agent role.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, the services can't be distributed across an IP network unless you configure a query SDG agent. For steps to configure a query SDG agent, see [Configure Query SDG Agents from Cisco SD-Access LAN and Wireless Fabric Mode, on page 60](#).

### Before you begin

Ensure that you've completed the steps in [Create Service Filters for Cisco SD-Access LAN and Wireless Fabric Mode, on page 58](#).

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.1) that announces the services (printer).
- Step 4** If you're using a policy extended node, choose **Peer** from the **Service Layer** drop-down list. If you're not using a policy extended node, choose **Local**.
- Step 5** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 6** Select the source VLAN (Vlan-A) to discover services (printer) from a specific network.
- Step 7** Enable or disable a service from a selected IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable a service from a selected IPv6 subnet. By default, this is enabled.
- Step 9** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.

- To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.

**Step 10** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)

**Step 11** Click **DONE**.

**Step 12** Click **CREATE**.

## Configure Query SDG Agents from Cisco SD-Access LAN and Wireless Fabric Mode

This section lists the additional configuration steps to distribute services to query SDG agents, based on a policy.

For instructions to configure a source SDG agent, see [Configure Source SDG Agents in Cisco SD-Access LAN and Wireless Fabric Mode, on page 59](#).

### Before you begin

Ensure that you've completed the steps in [Create Service Filters for Cisco SD-Access LAN and Wireless Fabric Mode, on page 58](#).

**Step 1** Click **Add** in the upper-right corner of the window.

**Step 2** Click the radio button to select a query SDG agent. By default, the source radio button is selected.

**Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.3) that receives queries for the services (Printer).

**Step 4** From the **Service Layer** drop-down list, choose **Local**.

**Step 5** Ensure that the **Any** check box is unchecked. By default, this is enabled.

**Step 6** Select the query VLAN (Vlan-B) to distribute services (printer) to a specific network.

**Step 7** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.

**Step 8** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.

**Step 9** For **Location Group**, do one of the following:

- To accept services from any location group, check the check box.
- To accept services from location group 0, choose **Default** from the drop-down list.
- To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.

**Step 10** (Optional) Click **Add Next** to add more query agents. (Repeat the preceding steps.)

**Step 11** Click **DONE**.

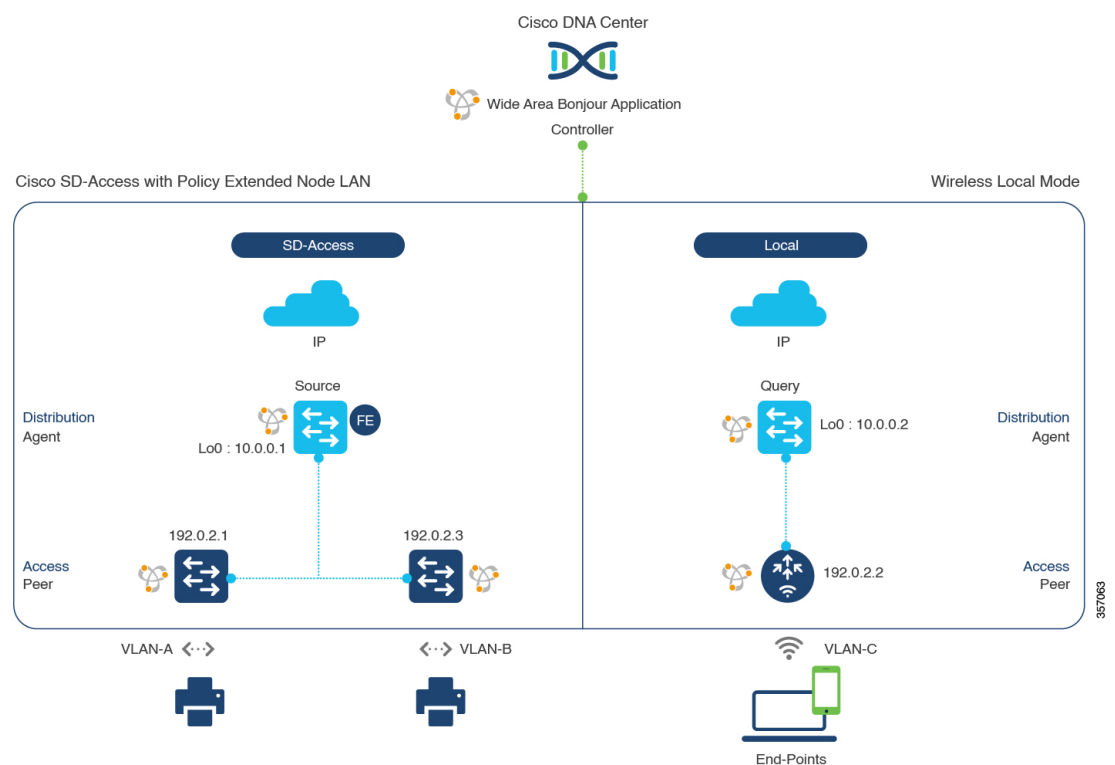
**Step 12** Click **CREATE**.

# Cisco SD-Access with Policy Extended Node LAN and Wireless Local Mode

This section provides step-by-step global configuration policy guidelines to enable Wide Area Bonjour between the Cisco SD-Access LAN with a policy extended node in Layer 2 access providing Bonjour services (such as wired printers) to users connected over wireless networks with Cisco wireless access points in local mode.

The following figure illustrates reference network topologies for Cisco SD-Access with Policy Extended Node LAN and wireless Local mode networks with Bonjour source and receiver devices across the fabric and external IP networks.

**Figure 25: Cisco SD-Access with Policy Extended Node LAN and Wireless Local Mode Network Service Routing**



For more information about the Cisco Catalyst 9800 Series Wireless Controller configuration guidelines, see the [Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide, Cisco IOS XE Amsterdam 17.3.x](#).

## Configure Service Filters for Cisco SD-Access with Policy Extended Node LAN and Wireless Local Mode

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted Cisco Catalyst SDG agent switches across IP networks.

- 
- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
- Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
- Step 3** Ensure that the **Service Filter** box is checked.
- Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain.  
You can also manually edit existing service filters from this list.
- Step 5** Click **Create Service Filter**.
- Step 6** From the **Network Mode** drop-down list, choose **Traditional** (the default mode).
- Step 7** Enter a unique name for the service filter.
- Step 8** (Optional) Enter a description for the service filter.
- Step 9** Select one or more service types to permit announcements and queries.
- Step 10** Enable or disable service filters after creating them. By default, the service filters are enabled.
- 

## Configure Source SDG Agents for Cisco SD-Access with Policy Extended Node LAN and Wireless Local Mode

This section lists the additional configuration steps to enable discovering wired printer sources from the LAN Fabric-Edge Switch-1 in an SDG agent role. The wired printer can be discovered by remotely connected wireless users from the Fabric-Edge LAN Switch-2 in an SDG agent role.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, the services can't be distributed across the IP network unless you configure a query SDG agent. For steps to configure a query SDG agent, see [Configure Query SDG Agents for Cisco SD-Access with Policy Extended Node LAN and Wireless Local Mode, on page 63](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for Cisco SD-Access with Policy Extended Node LAN and Wireless Local Mode, on page 61](#).

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.1) that announces the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Peer**.
- Step 5** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 6** Select the source VLAN (Vlan-A) to discover services (printer) from a specific network.
- Step 7** Enable or disable a service from a selected IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable a service from a selected IPv6 subnet. By default, this is enabled.
- Step 9** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.

- To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.

- Step 10** (Optional) Click the **Add Next** button to add more source SDG agents. (Repeat the preceding steps.)
- Step 11** Click **DONE**.
- Step 12** Click **CREATE**.
- 

## Configure Query SDG Agents for Cisco SD-Access with Policy Extended Node LAN and Wireless Local Mode

This section lists the additional configuration steps to distribute services to query SDG agents, based on a policy.

For instructions to configure a source SDG agent, see [Configure Source SDG Agents for Cisco SD-Access with Policy Extended Node LAN and Wireless Local Mode, on page 62](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for Cisco SD-Access with Policy Extended Node LAN and Wireless Local Mode, on page 61](#).

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.2) that announces the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Peer**.
- Step 5** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 6** Select the source VLAN (Vlan-C) to discover services (printer) from a specific network.
- Step 7** Enable or disable a service from a selected IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable a service from a selected IPv6 subnet. By default, this is enabled.
- Step 9** Enter the service peer IPv4 address (192.0.2.2).
- Step 10** Click the plus icon to add more service peers (192.0.2.4). Check the **Any** check box to accept services from any peer on the selected VLAN.
- Step 11** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 12** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)
- Step 13** Click **DONE**.
- Step 14** Click **CREATE**.
-

### What to do next

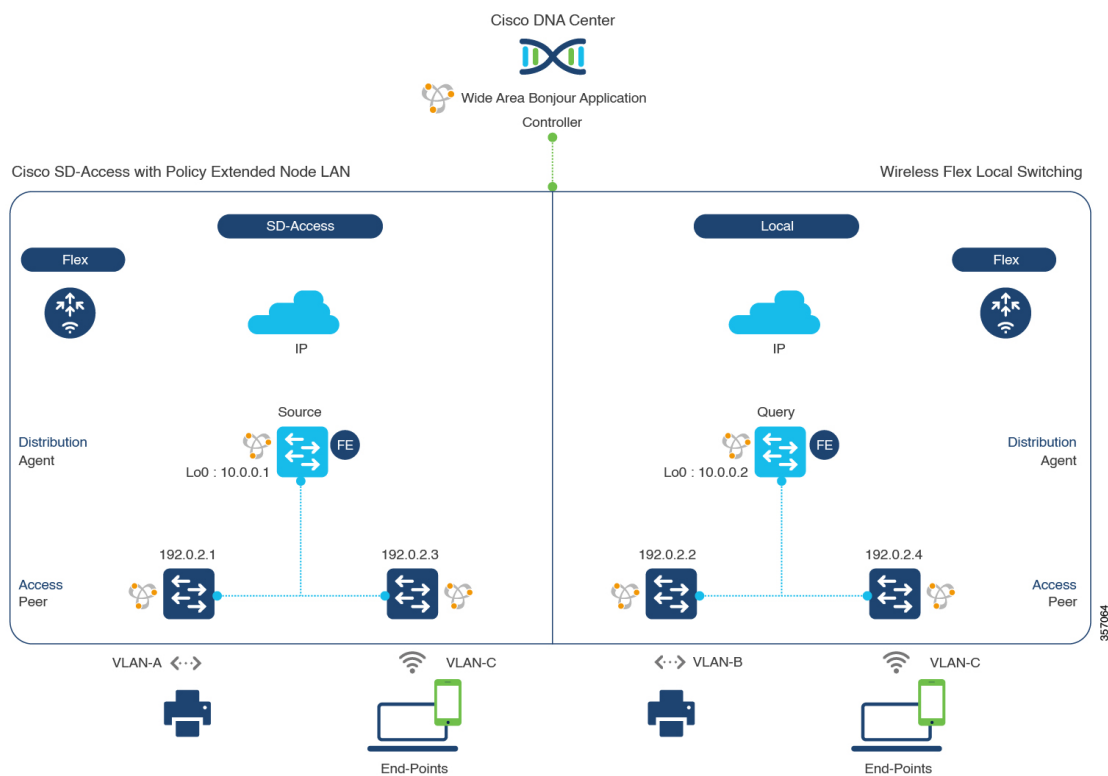
Create a new reverse service filter to permit Printer service discovery from source Fabric-Edge 10.0.0.2 and peer 192.0.2.2, and distribute the service to remote querying Fabric-Edge SDG agent 10.0.0.1 and wireless users connected to peer 192.0.2.3.

## Cisco SD-Access with Policy Extended Node LAN and Wireless FlexConnect Local Switching Mode

This section provides step-by-step global configuration policy guidelines to enable Wide Area Bonjour on Cisco SD-Access with Policy Extended Node LAN providing Bonjour services (such as wired printers) to local or remote wireless users connected over wireless networks with Cisco wireless access points in FlexConnect Local Switching mode.

The following figure illustrates reference network topologies for Cisco SD-Access with Policy Extended Node LAN and wireless FlexConnect Local Switching Mode networks with Bonjour source and receiver in virtual network environment.

**Figure 26: Cisco SD-Access with Policy Extended Node LAN and Wireless FlexConnect Local Switching Network Service Routing**





## Configure Service Filters for Cisco SD-Access with Policy Extended Node LAN and Wireless FlexConnect Local Switching Mode

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted Cisco Catalyst SDG agent switches across IP networks.

- 
- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
  - Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
  - Step 3** Ensure that the **Service Filter** box is checked.
  - Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain.  
You can also manually edit existing service filters from this list.
  - Step 5** Click **Create Service Filter**.
  - Step 6** From the **Network Mode** drop-down list, choose **Traditional** (the default mode).
  - Step 7** Enter a unique name for the service filter.
  - Step 8** (Optional) Enter a description for the service filter.
  - Step 9** Select one or more service types to permit announcements and queries.
  - Step 10** Enable or disable service filters after creating them. By default, the service filters are enabled.
- 

## Configure Source SDG Agents for Cisco SD-Access with Policy Extended Node LAN and Wireless FlexConnect Local Switching Mode

This section lists the additional configuration steps to enable discovering wired printer sources from the Fabric-Edge SDG agent LAN Distribution Block-1 switches paired with Layer 2 Catalyst switches in a service-peer role.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, the services can't be distributed across an IP network unless you configure the query SDG agents. For steps to configure a query SDG agent, see [Create Query SDG Agents for Cisco SD-Access with Policy Extended Node LAN and Wireless FlexConnect Local Switching Mode, on page 66](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for Cisco SD-Access with Policy Extended Node LAN and Wireless FlexConnect Local Switching Mode, on page 65](#).

- 
- Step 1** Click **Add** in the upper-right corner of the window.
  - Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.
  - Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.1) that announces the services (printer).
  - Step 4** From the **Service Layer** drop-down list, choose **Peer**.
  - Step 5** Uncheck the **Any** check box. By default, this check box is unchecked.
  - Step 6** Select the source VLAN (Vlan-A and Vlan-B) to discover services (printer) from a specific network.

- Step 7** Enable or disable a service from a selected IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable a service from a selected IPv6 subnet. By default, this is enabled.
- Step 9** Enter the service peer IPv4 address (192.0.2.1). Click the plus icon to add more peers (192.0.2.3). Select **Any** to accept services from any peer on the selected VLAN.
- Step 10** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 11** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)
- Step 12** Click **DONE**.
- Step 13** Click **CREATE**.

---

## Create Query SDG Agents for Cisco SD-Access with Policy Extended Node LAN and Wireless FlexConnect Local Switching Mode

This section lists the next configuration steps to distribute services to query SDG agents, based on a policy.

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for Cisco SD-Access with Policy Extended Node LAN and Wireless FlexConnect Local Switching Mode](#), on page 65.

- 
- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.2) that announces the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Peer**.
- Step 5** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 6** Select the source VLAN (Vlan-C) to discover services (printer) from a specific network.
- Step 7** Enable or disable a service from a selected IPv4 subnet. By default, this is enabled.
- Step 8** Enable or disable a service from a selected IPv6 subnet. By default, this is enabled.
- Step 9** Enter the service peer IPv4 address (192.0.2.2).
- Step 10** Click the plus icon to add more service peers (192.0.2.4). Check the **Any** check box to accept services from any peer on the selected VLAN.
- Step 11** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 12** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)
- Step 13** Click **DONE**.

**Step 14** Click **CREATE**.

---

**What to do next**

Create a new reverse service filter configuration to permit service discovery from the source Fabric-Edge 10.0.0.2 and peer 192.0.2.2, and distribute the service to a remote querying Fabric-Edge SDG agent 10.0.0.1 and wireless users connected to the peer 192.0.2.3.



---

**Note** The Cisco Catalyst 9800 Series Wireless Controller with FlexConnect Access-Point in Local Switching mode doesn't require any mDNS configuration settings.

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## CHAPTER 7

# Deploy Wide Area Bonjour on BGP EVPN Networks

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- [About Wide Area Bonjour on BGP EVPN Networks, on page 69](#)
- [BGP EVPN Layer 3 Routed Fabric and Wireless Local Mode, on page 69](#)
- [BGP EVPN Distributed AnyCast Gateway Fabric and Wireless Local Mode, on page 73](#)
- [BGP EVPN Centralized Gateway Fabric and Wireless Local Mode, on page 76](#)
- [BGP EVPN Layer 2 Bridge Fabric and Wireless Local Mode, on page 80](#)
- [BGP EVPN Routed Access LAN, on page 83](#)

## About Wide Area Bonjour on BGP EVPN Networks

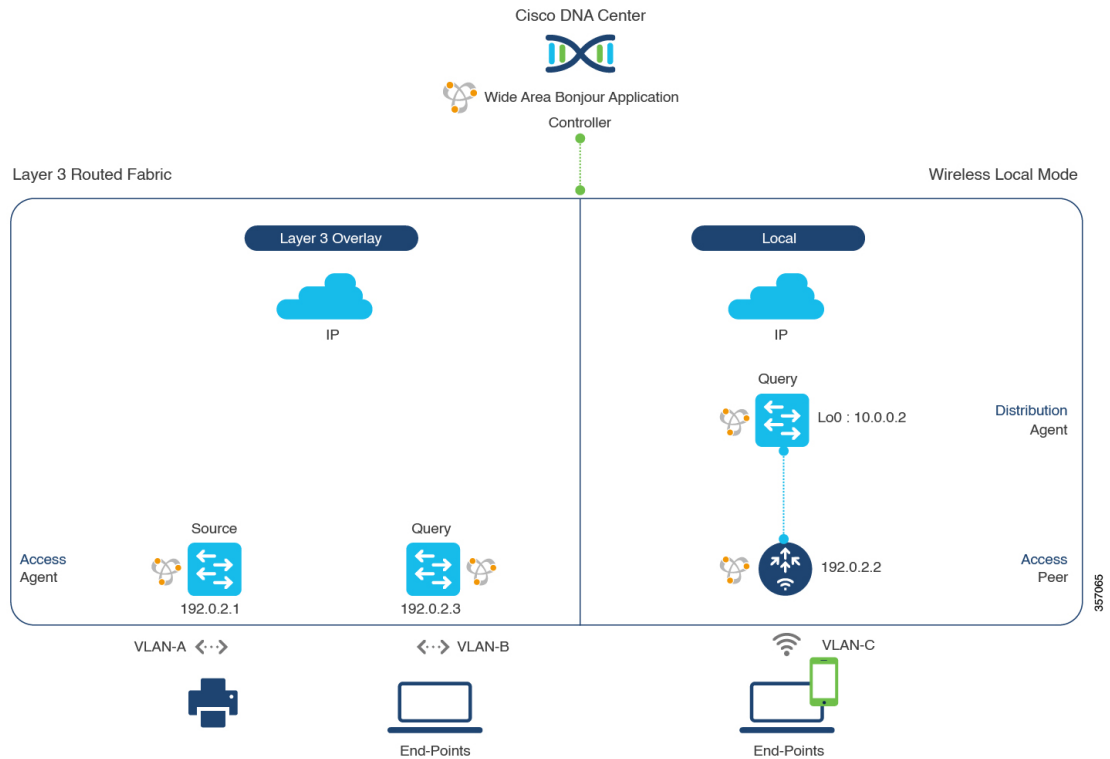
Cisco Wide Area Bonjour supports various types of BGP EVPN overlay networks for wired and traditional wireless LAN in Local mode network deployment models. This chapter provides step-by-step configuration to implement global service filter policies in the Cisco Wide Area Bonjour application, which enables network-wide service routing functions for Layer 3 or Layer 2 overlay virtual network environments, without extending the Layer 2 flood boundary.

## BGP EVPN Layer 3 Routed Fabric and Wireless Local Mode

This section provides step-by-step global configuration policy guidelines to enable Wide Area Bonjour between the BGP EVPN VTEP LAN switch, which provides different Bonjour services such as wired printers, and remotely connected wired users on different IP subnets and wireless users connected over Local mode wireless networks.

The following figure illustrates reference network topologies for BGP EVPN Layer 3 routed LAN and Local mode wireless networks with Bonjour source and receiver devices in virtual network devices.

Figure 27: BGP EVPN Layer 3 Routed LAN and Local Mode Wireless Virtual Network Service Routing



For more information about the Cisco Catalyst 9800 Series Wireless Controller configuration guidelines, see the [Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide, Cisco IOS XE Amsterdam 17.3.x](#).

## Configure Service Filters for a BGP EVPN Layer 3 Routed Fabric and Wireless Local Mode

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted Cisco Catalyst SDG agent switches across your IP network.

- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
- Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
- Step 3** Ensure that the **Service Filter** box is checked.
- Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain.  
You can also manually edit existing service filters from this list.
- Step 5** Click **Create Service Filter**.
- Step 6** From the **Network Mode** drop-down list, choose **Overlay**.
- Step 7** Enter a unique name for the service filter.

- Step 8** (Optional) Enter a description for the service filter.
- Step 9** Choose one or more service types to permit announcements and queries.
- Step 10** Enable or disable service filters after creating them. By default, they are enabled.
- 

## Configure Source Agents for BGP EVPN Layer 3 Routed Fabric and Wireless Local Mode

This section provides additional configuration steps to enable discovering wired printer sources from the EVPN LAN VTEP Switch-1 in an SDG agent role. The wired printer can be discovered by remotely connected wired users in the EVPN LAN VTEP switch-2 in SDG agent role. The wireless distribution switches in a BGP EVPN VTEP role paired with a Cisco Catalyst 9800 Series Wireless Controller in a service-peer role receive query responses for wired printers when browsed over wireless Local mode networks.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, the service can't be distributed across the IP network unless you configure the query SDG agent. For steps to configure a query SDG agent, see [Configure Query SDG Agents for BGP EVPN Layer 3 Routed Fabric and Wireless Local Mode, on page 72](#).

### Before you begin

Ensure you've completed the steps outlined in [Configure Service Filters for a BGP EVPN Layer 3 Routed Fabric and Wireless Local Mode, on page 70](#).

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.1) that announces the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Local**.
- Step 5** Use the toggle switch to enable Symmetric IRB.
- Step 6** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 7** Select the source VLAN (Vlan-A) to discover services (printer) from a specific network.
- Step 8** Enable or disable a service from a selected IPv4 subnet. By default, this is enabled.
- Step 9** Enable or disable a service from a selected IPv6 subnet. By default, this is enabled.
- Step 10** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 11** Enter the L3 VNI ID mapped to the IP VRF. Select **Any** to accept services from any L3 VNI ID.
- Step 12** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)
- Step 13** Click **DONE**.
- Step 14** Click **CREATE**.
-

## Configure Query SDG Agents for BGP EVPN Layer 3 Routed Fabric and Wireless Local Mode

This section lists the additional configuration steps to distribute service to query SDG agents, based on a policy.

For instructions to configure a source SDG agent, see [Configure Source Agents for BGP EVPN Layer 3 Routed Fabric and Wireless Local Mode, on page 71](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for a BGP EVPN Layer 3 Routed Fabric and Wireless Local Mode, on page 70](#).

- 
- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a query SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.3) that receives queries for the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Local**.
- Step 5** Use the toggle switch to enable Symmetric IRB.
- Step 6** Ensure that the **Any** check box is unchecked. By default, this check box is unchecked.
- Step 7** Select the query VLAN (Vlan-B) to distribute services (printer) to a specific network.
- Step 8** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.
- Step 9** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.
- Step 10** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 11** Enter the L3 VNI ID mapped to the IP VRF. Choose **Any** to match any L3 VNI ID.
- Step 12** From the **Service Layer** drop-down list, choose **Peer**.
- Step 13** Ensure that the **Any** check box is unchecked. By default, this check box is unchecked.
- Step 14** Select the query VLAN (Vlan-C) to distribute services (printer) to a specific network.
- Step 15** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.
- Step 16** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.
- Step 17** Enter the service peer IPv4 address (192.0.2.2). Click the plus icon to add more peers. Choose **Any** to accept services from any peer on a selected VLAN.
- Step 18** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 19** (Optional) Click **Add Next** to add more query agents. (Repeat the preceding steps.)
- Step 20** Click **DONE**.



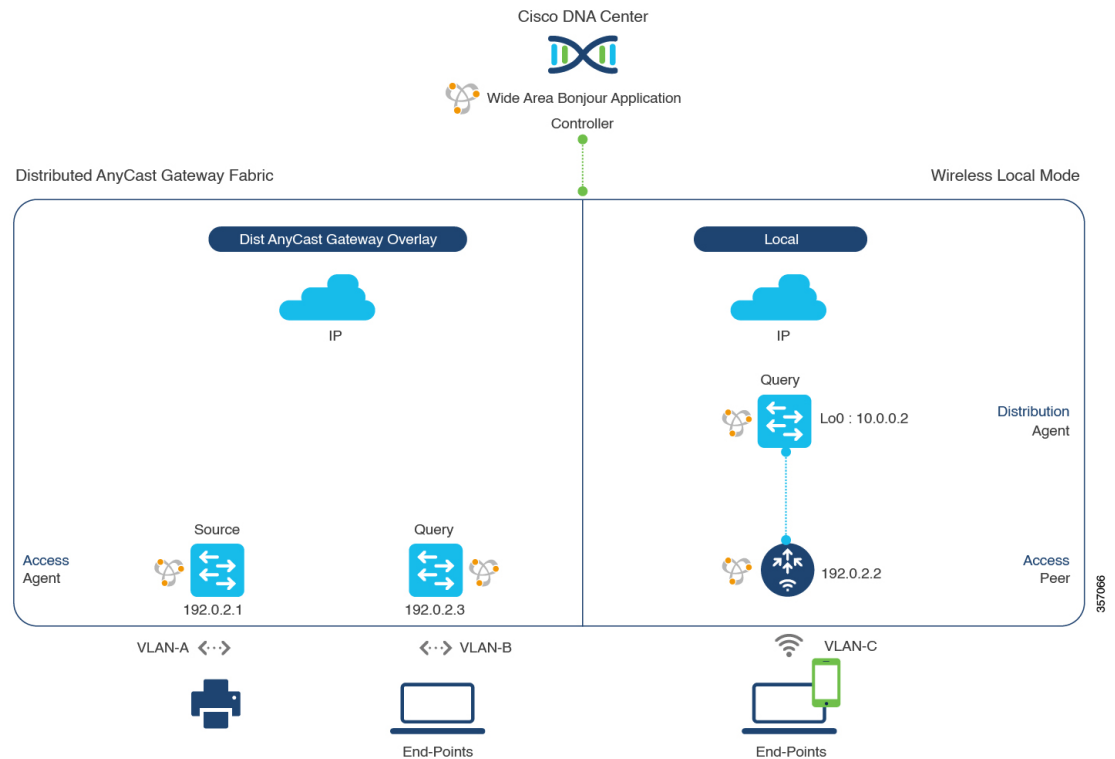
Step 21 Click CREATE.

## BGP EVPN Distributed AnyCast Gateway Fabric and Wireless Local Mode

This section provides step-by-step global configuration policy guidelines to enable Wide Area Bonjour between the BGP EVPN VTEP LAN switch, which provides Bonjour services (such as wired printers) to remotely connected wired users on the same IP subnet, and wireless users connected over Local mode wireless networks.

The following figure illustrates reference network topologies for BGP EVPN Distributed AnyCast Gateway LAN and Local mode wireless networks with Bonjour source and receiver devices in the virtual network environment.

**Figure 28: BGP EVPN Distributed AnyCast Gateway LAN and Local Mode Wireless Virtual Network Service Routing**



For more information about the Cisco Catalyst 9800 Series Wireless Controller configuration guidelines, see the [Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide, Cisco IOS XE Amsterdam 17.3.x](#).

## Configure Service Filters for BGP EVPN Distributed AnyCast Gateway Fabric and Wireless Local Mode

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted Cisco Catalyst SDG agent switches across your IP network.

- 
- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
  - Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
  - Step 3** Ensure that the **Service Filter** box is checked.
  - Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain.  
You can also manually edit existing service filters from this list.
  - Step 5** Click **Create Service Filter**.
  - Step 6** From the **Network Mode** drop-down list, choose **Overlay**.
  - Step 7** Enter a unique name for the service filter.
  - Step 8** (Optional) Enter a description for the service filter.
  - Step 9** Choose one or more service types to permit announcements and queries.
  - Step 10** Enable or disable service filters after creating them. By default, they are enabled.
- 

## Configure Source SDG Agents for BGP EVPN Distributed AnyCast Gateway Fabric and Wireless Local Mode

This section provides additional configuration steps to enable discovering wired printer sources from the BGP EVPN LAN VTEP switch-1 in an SDG agent role. The wired printer can be discovered by remotely connected wired users in EVPN LAN VTEP switch-2 in an SDG agent role. The wireless distribution switches in a BGP EVPN VTEP role, paired with a Cisco Catalyst 9800 Series Wireless Controller in a service peer role, receive query responses for wired printers when browsed over wireless Local mode networks.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, the services can't be distributed across the IP network unless you configure query SDG agents. For steps to configure a query SDG agent, see [Configure Query SDG Agents for BGP EVPN Distributed AnyCast Gateway Fabric and Wireless Local Mode, on page 75](#).

### Before you begin

Ensure you've completed the steps outlined in [Configure Service Filters for BGP EVPN Distributed AnyCast Gateway Fabric and Wireless Local Mode, on page 74](#).

- 
- Step 1** Click **Add** in the upper-right corner of the window.
  - Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.
  - Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.1) that announces the services (printer).
  - Step 4** From the **Service Layer** drop-down list, choose **Local**.

- Step 5** Use the toggle switch to enable Symmetric IRB.
- Step 6** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 7** Choose the source VLAN (Vlan-A) to discover services (printer) from a specific network.
- Step 8** Enable or disable a service from a selected IPv4 subnet. By default, this is enabled.
- Step 9** Enable or disable a service from a selected IPv6 subnet. By default, this is enabled.
- Step 10** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 11** Enter the L3 VNI ID mapped to the IP VRF. Choose **Any** to accept services from any L3 VNI ID.
- Step 12** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)
- Step 13** Click **DONE**.
- Step 14** Click **CREATE**.
- 

## Configure Query SDG Agents for BGP EVPN Distributed AnyCast Gateway Fabric and Wireless Local Mode

This section lists the additional configuration steps to distribute services to query agents, based on a policy.

For instructions to configure a source SDG agent, see [Configure Source SDG Agents for BGP EVPN Distributed AnyCast Gateway Fabric and Wireless Local Mode, on page 74](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for BGP EVPN Distributed AnyCast Gateway Fabric and Wireless Local Mode, on page 74](#).

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a query SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.3) that receives queries for the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Local**.
- Step 5** Use the toggle switch to enable Symmetric IRB.
- Step 6** Ensure that the **Any** check box is unchecked. By default, this check box is unchecked.
- Step 7** Select the query VLAN (Vlan-B) to distribute services (printer) to a specific network.
- Step 8** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.
- Step 9** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.
- Step 10** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.

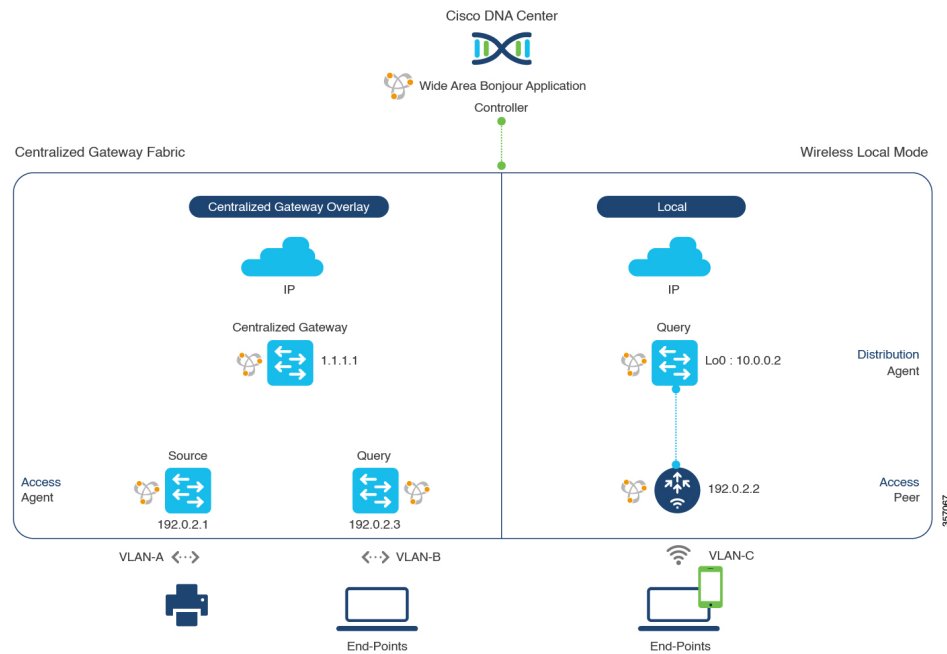
- Step 11** Enter the L3 VNI ID mapped to the IP VRF. Choose **Any** to match any L3 VNI ID.
- Step 12** From the **Service Layer** drop-down list, choose **Peer**.
- Step 13** Ensure that the **Any** check box is unchecked. By default, this check box is unchecked.
- Step 14** Select the query VLAN (Vlan-C) to distribute services (printer) to a specific network.
- Step 15** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.
- Step 16** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.
- Step 17** Enter the service peer IPv4 address (192.0.2.2). Click the plus icon to add more peers. Choose **Any** to accept services from any peer on a selected VLAN.
- Step 18** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 19** (Optional) Click **Add Next** to add more query agents. (Repeat the preceding steps.)
- Step 20** Click **DONE**.
- Step 21** Click **CREATE**.
- 

## BGP EVPN Centralized Gateway Fabric and Wireless Local Mode

This section provides step-by-step global configuration policy guidelines to enable Wide Area Bonjour between the BGP EVPN VTEP LAN switch which provides different Bonjour services (such as wired printers) and remotely connected wired users on the same Layer 2 overlay VLAN, and wireless users connected over Local mode wireless networks.

The following figure illustrates reference network topologies for BGP EVPN Centralized Gateway LAN and Local mode wireless networks with Bonjour source and receiver devices in a virtual network environment.

Figure 29: BGP EVPN Centralized Gateway LAN and Local Mode Wireless Virtual Network Service Routing



For more information about Cisco Catalyst 9800 Series Wireless Controller configuration guidelines, see [Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide, Cisco IOS XE Amsterdam 17.3.x](#).

## Configure Service Filters for BGP EVPN Centralized Gateway Fabric and Wireless Local Mode

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted Cisco Catalyst SDG agent switches across your IP network.

- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
- Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
- Step 3** Ensure that the **Service Filter** box is checked.
- Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain.  
You can also manually edit existing service filters from this list.
- Step 5** Click **Create Service Filter**.
- Step 6** From the **Network Mode** drop-down list, choose **Overlay**.
- Step 7** Enter a unique name for the service filter.
- Step 8** (Optional) Enter a description for the service filter.
- Step 9** Select one or more service types to permit announcements and queries.

**Step 10** Enable or disable service filters after creating them. By default, they are enabled.

---

## Configure Source SDG Agents in BGP EVPN Centralized Gateway Fabric and Wireless Local Mode

This section provides additional configuration steps to enable discovering wired printer sources from the EVPN Layer 2 Leaf LAN VTEP switch-1 in an SDG agent role. The wired printer can be discovered by remotely connected wired users in the EVPN Layer 2 Leaf LAN VTEP switch-2 in an SDG agent role. The wireless distribution switches in a BGP EVPN VTEP role, paired with a Cisco Catalyst 9800 Series Wireless Controller in a service peer role, receive query responses for wired printers when browsed over wireless Local mode networks.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, the services can't be distributed across the IP network unless you configure query SDG agents. For steps to configure a query SDG agent, see [Configure Query SDG Agents for BGP EVPN Centralized Gateway Fabric and Wireless Local Mode, on page 78](#).

### Before you begin

Ensure you've completed the steps outlined in [Configure Service Filters for BGP EVPN Centralized Gateway Fabric and Wireless Local Mode, on page 77](#).

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.1) that announces the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Local**.
- Step 5** Use the toggle switch to enable Symmetric IRB.
- Step 6** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 7** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 8** Enter the L2 VNI ID mapped to the IP VRF. Choose **Any** to accept services from any L2 VNI ID.
- Step 9** Click **DONE**.
- Step 10** Click **CREATE**.
- 

## Configure Query SDG Agents for BGP EVPN Centralized Gateway Fabric and Wireless Local Mode

This section lists the additional configuration steps to distribute service to query SDG agents, based on a policy.

For instructions to configure a source SDG agent, see [Configure Source SDG Agents in BGP EVPN Centralized Gateway Fabric and Wireless Local Mode](#), on page 78.

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for BGP EVPN Centralized Gateway Fabric and Wireless Local Mode](#), on page 77.

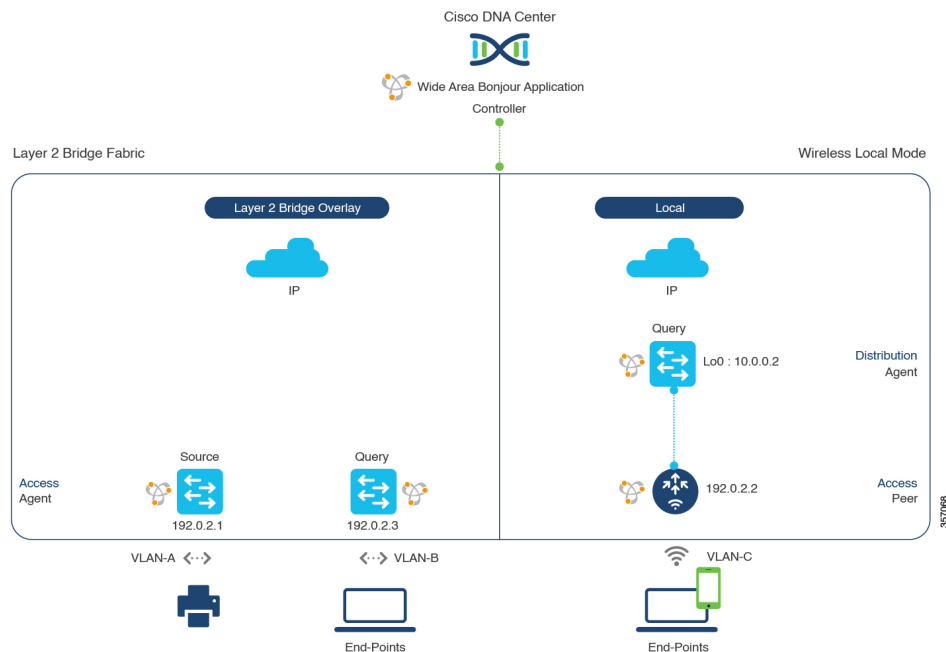
- 
- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a query SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.3) that receives queries for the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Local**.
- Step 5** Use the toggle switch to enable Symmetric IRB.
- Step 6** Ensure that the **Any** check box is unchecked. By default, this check box is unchecked.
- Step 7** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 8** Enter the L2 VNI ID mapped to the MAC VRF. Choose **Any** to match any L2 VNI ID.
- Step 9** Click **DONE**.
- Step 10** Click the radio button to select a query SDG agent. By default, the source radio button is selected.
- Step 11** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.2) that receives queries for the services (printer).
- Step 12** From the **Service Layer** drop-down list, choose **Peer**.
- Step 13** Ensure that the **Any** check box is unchecked. By default, this check box is unchecked.
- Step 14** Select the query VLAN (Vlan-C) to distribute services (printer) to a specific network.
- Step 15** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.
- Step 16** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.
- Step 17** Enter the service peer IPv4 address (192.0.2.2). Choose **Any** to accept services from any peer on a selected VLAN.
- Step 18** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 19** (Optional) Click **Add Next** to add more query agents. (Repeat the preceding steps.)
- Step 20** Click **DONE**.
- Step 21** Click **CREATE**.
-

## BGP EVPN Layer 2 Bridge Fabric and Wireless Local Mode

This section provides step-by-step global configuration policy guidelines to enable Wide Area Bonjour between the BGP EVPN VTEP LAN switch providing Bonjour services, such as wired printers, and remotely connected wired users on the same Layer 2 overlay VLAN and wireless users connected over Local mode wireless networks.

The following figure illustrates reference network topologies for BGP EVPN Layer 2 LAN and Local mode wireless networks with Bonjour source and receiver devices in virtual network environments.

**Figure 30: BGP EVPN Layer 2 Leaf LAN and Local Mode Wireless Virtual Network Service Routing**



For more information about the Cisco Catalyst 9800 Series Wireless Controller configuration guidelines, see the [Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide, Cisco IOS XE Amsterdam 17.3.x](#).

## Configure Service Filters for BGP EVPN Layer 2 Bridge Fabric and Wireless Local Mode

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted Cisco Catalyst SDG agent switches across your IP network.

- 
- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
  - Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
  - Step 3** Ensure that the **Service Filter** box is checked.



- Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain. You can also manually edit existing service filters from this list.
- Step 5** Click **Create Service Filter**.
- Step 6** From the **Network Mode** drop-down list, choose **Overlay**.
- Step 7** Enter a unique name for the service filter.
- Step 8** (Optional) Enter a description for the service filter.
- Step 9** Select one or more service types to permit announcements and queries.
- Step 10** Enable or disable service filters after creating them. By default, they are enabled.
- 

## Configure Source SDG Agents for BGP EVPN Layer 2 Bridge Fabric and Wireless Local Mode

This section provides additional configuration steps for global policies to enable discovering wired printer sources from the EVPN Layer 2 Leaf LAN VTEP switch-1 in an SDG agent role. The wireless distribution switches in a BGP EVPN VTEP role, paired with a Cisco Catalyst 9800 Series Wireless Controller in a service-peer role, receive query responses for wired printers when browsed over the wireless Local mode network.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, the services can't be distributed across the IP network unless you configure query SDG agents. For steps to configure a query SDG agent, see [Configure Query SDG Agents for BGP EVPN Layer 2 Bridge Fabric and Wireless Local Mode, on page 82](#).

### Before you begin

Ensure you've completed the steps outlined in [Configure Service Filters for BGP EVPN Layer 2 Bridge Fabric and Wireless Local Mode, on page 80](#).

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.1) that announces the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Local**.
- Step 5** Use the toggle switch to enable Symmetric IRB.
- Step 6** Uncheck the **Any** check box. By default, this check box is unchecked.
- Step 7** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 8** Enter the L2 VNI ID mapped to the IP VRF. Choose **Any** to accept services from any L2 VNI ID.
- Step 9** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)
- Step 10** Click **DONE**.

**Step 11** Click **CREATE**.

---

## Configure Query SDG Agents for BGP EVPN Layer 2 Bridge Fabric and Wireless Local Mode

This section lists the additional configuration steps to distribute service to query SDG agents, based on a policy.

For instructions to configure a source SDG agent, see [Configure Source SDG Agents for BGP EVPN Layer 2 Bridge Fabric and Wireless Local Mode, on page 81](#).

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for BGP EVPN Layer 2 Bridge Fabric and Wireless Local Mode, on page 80](#).

---

- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a query SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.3) that receives queries for the services (printer, for example).
- Step 4** From the **Service Layer** drop-down list, choose **Local**.
- Step 5** Use the toggle switch to enable Symmetric IRB.
- Step 6** Ensure that the **Any** check box is unchecked. By default, this check box is unchecked.
- Step 7** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 8** Enter the L2 VNI ID mapped to the MAC VRF. Choose **Any** to match any L2 VNI ID.
- Step 9** Click **Done**.
- Step 10** From the **SDG Agent/IP** drop-down list, choose an SDG agent (10.0.0.2) that receives queries for the service type (printer).
- Step 11** From the **Service Layer** drop-down list, choose **Peer**.
- Step 12** Ensure that the **Any** check box is unchecked. By default, this check box is unchecked.
- Step 13** Select the query VLAN (Vlan-C) to distribute services (printer) to a specific network.
- Step 14** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.
- Step 15** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.
- Step 16** Enter the service peer IPv4 address (192.0.2.2). Click the plus icon to add more peers. Choose **Any** to accept services from any peer on a selected VLAN.
- Step 17** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.

- To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.

**Step 18** (Optional) Click **Add Next** to add more query agents. (Repeat the preceding steps.)

**Step 19** Click **DONE**.

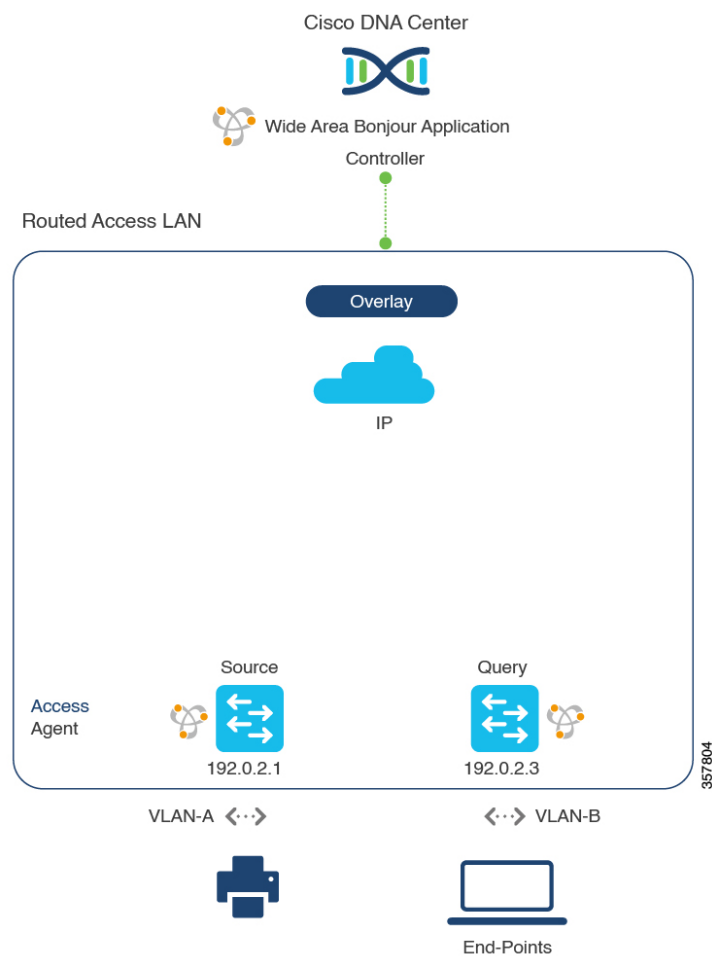
**Step 20** Click **CREATE**.

## BGP EVPN Routed Access LAN

This section provides step-by-step global configuration policy guidelines to enable Wide Area Bonjour between the BGP EVPN VTEP LAN switch, which provides different Bonjour services such as wired printers, and remotely connected wired users and wireless users on different IP subnets.

The following figure illustrates reference network topology for BGP EVPN routed access LAN with Bonjour source and receiver devices in virtual network devices.

**Figure 31: BGP EVPN Routed Access LAN Service Routing**



For more information about the Cisco Nexus switches configuration guidelines, see the [Cisco DNA Service For Bonjour Configuration Guide, Cisco Nexus 9000 Series NX-OS, Release 10.2\(3\)F](#).

## Configure Service Filters for BGP EVPN Routed Access LAN

This section lists the general steps to implement global service filters, which permit the Cisco Wide Area Bonjour application to dynamically discover and distribute service information between trusted SDG agent switches across your IP network.

- 
- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
  - Step 2** From the sidebar, select the subdomain for which you want to create the service filter.
  - Step 3** Ensure that the **Service Filter** box is checked.
  - Step 4** Click the service filter icon from the topology to view a list of the service filters for the selected domain.  
You can also manually edit existing service filters from this list.
  - Step 5** Click **Create Service Filter**.
  - Step 6** From the **Network Mode** drop-down list, choose **Overlay**.
  - Step 7** Enter a unique name for the service filter.
  - Step 8** (Optional) Enter a description for the service filter.
  - Step 9** Choose one or more service types to permit announcements and queries.
  - Step 10** Enable or disable service filters after creating them. By default, they are enabled.
- 

## Configure Source SDG Agents for BGP EVPN Routed Access LAN

This section provides additional configuration steps to enable discovering wired printer sources from the EVPN LAN VTEP Switch-1 in an SDG agent role. The wired printer can be discovered by remotely connected wired users in the EVPN LAN VTEP switch-2 in SDG agent role.

A unidirectional service filter allows network-wide service discovery for operation and management purposes. However, the service can't be distributed across the IP network unless you configure the query SDG agent. For steps to configure a query SDG agent, see [Configure Query SDG Agents in Traditional Routed Access LAN, on page 54](#).

### Before you begin

Ensure you've completed the steps outlined in [Configure Service Filters for BGP EVPN Routed Access LAN, on page 84](#).

- 
- Step 1** Click **Add** in the upper-right corner of the window.
  - Step 2** Click the radio button to select a source SDG agent. By default, the source radio button is selected.
  - Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.1) that announces the services (printer).
  - Step 4** From the **Service Layer** drop-down list, choose **Local**.
  - Step 5** Use the toggle switch to enable Symmetric IRB.
  - Step 6** Uncheck the **Any** check box. By default, this check box is unchecked.

- Step 7** Select the source VLAN (Vlan-A) to discover services (printer) from a specific network.
- Step 8** Enable or disable a service from a selected IPv4 subnet. By default, this is enabled.
- Step 9** Enable or disable a service from a selected IPv6 subnet. By default, this is enabled.
- Step 10** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 11** Enter the VNI ID mapped to the IP VRF. Select **Any** to accept services from any VNI ID.
- Step 12** (Optional) Click **Add Next** to add more source SDG agents. (Repeat the preceding steps.)
- Step 13** Click **DONE**.
- Step 14** Click **CREATE**.
- 

## Configure Query SDG Agents for BGP EVPN Routed Access LAN

This section lists the additional configuration steps to distribute service to query SDG agents, based on a policy.

For instructions to configure a source SDG agent, see [Configure Source SDG Agents for BGP EVPN Routed Access LAN](#), on page 84.

### Before you begin

Ensure that you've completed the steps in [Configure Service Filters for BGP EVPN Routed Access LAN](#), on page 84.

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- Step 1** Click **Add** in the upper-right corner of the window.
- Step 2** Click the radio button to select a query SDG agent. By default, the source radio button is selected.
- Step 3** From the **SDG Agent/IP** drop-down list, choose an SDG agent (192.0.2.3) that receives queries for the services (printer).
- Step 4** From the **Service Layer** drop-down list, choose **Local**.
- Step 5** Use the toggle switch to enable Symmetric IRB.
- Step 6** Ensure that the **Any** check box is unchecked. By default, this check box is unchecked.
- Step 7** Select the query VLAN (Vlan-B) to distribute services (printer) to a specific network.
- Step 8** Enable or disable services from the selected query IPv4 subnet. By default, this is enabled.
- Step 9** Enable or disable services from the selected query IPv6 subnet. By default, this is enabled.
- Step 10** For **Location Group**, do one of the following:
- To accept services from any location group, check the check box.
  - To accept services from location group 0, choose **Default** from the drop-down list.
  - To use a custom location group ID, choose **Custom** from the drop-down list and enter the location group ID. The valid range is from 1 to 4096.
- Step 11** Enter the VNI ID mapped to the IP VRF. Choose **Any** to match any VNI ID.
- Step 12** (Optional) Click **Add Next** to add more query agents. (Repeat the preceding steps.)

**Step 13** Click **DONE**.

**Step 14** Click **CREATE**.

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## CHAPTER 8

# Monitor the Cisco Wide Area Bonjour Application

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- [Cisco Wide Area Bonjour Application Assurance](#), on page 87
- [Cisco Wide Area Bonjour Assurance Overview](#), on page 87
- [Cisco Wide Area Bonjour Application Dashboard](#), on page 88
- [Subdomain 360°](#), on page 90
- [Wide Area Bonjour Monitor](#), on page 93

## Cisco Wide Area Bonjour Application Assurance

The Cisco Wide Area Bonjour application supports comprehensive assurance capabilities. It manages service routing with network-wide, distributed Cisco Catalyst and Cisco Nexus switches in SDG agent roles, and mDNS services discovered over the Wide Area Bonjour domain. You can determine the service routing state, mDNS service state, and more at various levels for day-2 operations, analysis, and troubleshooting. This chapter provides guidelines to manage the Cisco Wide Area Bonjour application with various supporting service routing assurance functions.

## Cisco Wide Area Bonjour Assurance Overview

The Cisco Wide Area Bonjour application supports multilevel assurance capabilities for day-to-day operations. The service routing, instance monitoring, management, and troubleshooting functions are divided into three major categories. Each category serves a unique function to manage and troubleshoot Wide Area Bonjour service routing for day-2 operation. The Monitor function comprises the following categories:

- **Dashboard:** The Cisco Wide Area Bonjour application landing page provides key statistics in various formats to quickly determine service routing health across the network. Network administrators can monitor the operational status of service routing with SDG agent devices, historical charts of service discovery requests, processing and drops from network-wide distributed devices, and the top-five talkers across the network.
- **Subdomain 360°:** Network administrators can collect statistics and status counts in the 360° view. When you click a subdomain, the left-panel monitoring and configuration bar opens automatically. You can verify configured policies and discovered service instances on a per-subdomain basis in the Configuration section.

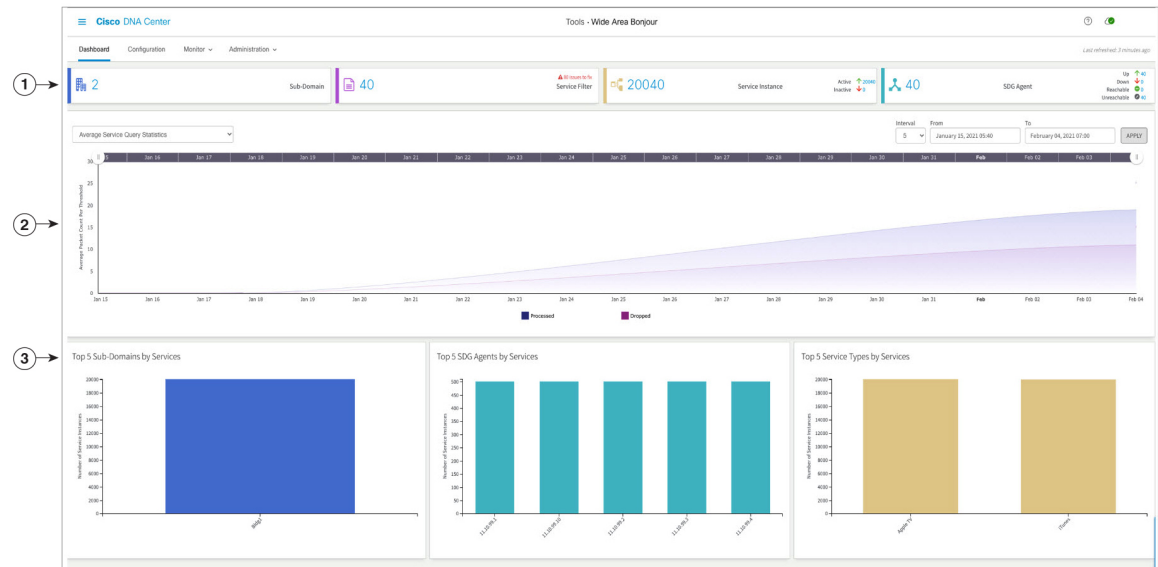
- **Monitor:** You can use the comprehensive three-tier monitoring and troubleshooting function for various day-2 operations. Network administrators use the detail view of the SDG agent, service instance, and advanced troubleshooting capabilities to manage and troubleshoot the Wide Area Bonjour domain with a single pane of glass in Cisco DNA Center.

## Cisco Wide Area Bonjour Application Dashboard

The Cisco Wide Area Bonjour dashboard provides real-time, aggregated information about service counts, and state visibility combined with top talkers across the Wide Area Bonjour domain. The Cisco Wide Area Bonjour application home page is divided into three layouts that provide key indicators of the overall health of the Wide Area Bonjour domain. These domains show the SDG agent device reachability, service routing status, and query statistics in real time.

The following figure shows the Cisco Wide Area Bonjour application dashboard.

**Figure 32: Cisco Wide Area Bonjour Application Dashboard**



1	Dashlets	3	Top talkers
2	Service query		

The following table describes the Cisco Wide Area Bonjour application dashboard functions.



Table 10: Cisco Wide Area Bonjour Application Dashboard Functions

Management	Function
Dashlets	<p>Dashlets provide a quick statistical view of policy configuration and global service routing status. Dashlets are divided into the following categories, which provide unique service assurance capabilities:</p> <ul style="list-style-type: none"> <li>• <b>Subdomain:</b> Total count of configured subdomains in the Cisco Wide Area Bonjour application. A subdomain is a logical grouping of network devices, policies, and mDNS services that can be represented in an enterprise network location, such as <i>Bldg-1</i>.</li> <li>• <b>Service Filter:</b> Total count of service filter policies configured across all subdomains of the Cisco Wide Area Bonjour application. The service filter count includes active and inactive policies.</li> <li>• <b>Service Instance:</b> Total dynamically discovered service instance count from all SDG agent switches across the Wide Area Bonjour domain. The service instance count includes active and inactive entries.</li> <li>• <b>SDG Agent:</b> Provides assurance information: <ul style="list-style-type: none"> <li>• Total number of SDG agent switches in UP state with service routing in operational state.</li> <li>• Total number of SDG agent switches in DOWN state with service routing in nonoperational state.</li> <li>• Total number of SDG agent switches in REACHABLE state with operational IP connectivity.</li> <li>• Total number of SDG agent switches in UNREACHABLE state with nonoperational IP connectivity.</li> </ul> </li> </ul>
Service Query – Average Statistics	<p>Provides a historical chart view of the average number of mDNS service query messages that the Cisco DNA Center received from each SDG agent. The SDG agent sends these messages to discover services for locally attached wired or wireless endpoints. You can adjust the chart based on the date, time range, and minute interval providing deeper and more granular statistics counters within the provided time series. Two-layer average service query charts provide the following statistics:</p> <ul style="list-style-type: none"> <li>• <b>Processed:</b> The Cisco Wide Area Bonjour classify and mark Processed for a complete flow of incoming service discovery request is successfully matched with policy permission and outgoing service distribution to each querying SDG agent.</li> <li>• <b>Dropped:</b> The Cisco Wide Area Bonjour classify and mark Dropped for incoming service discovery request and policy permission has a mismatch from each querying SDG agent.</li> </ul>

Management	Function
Service Query – Cumulative Statistics	<p>Provides a historical chart view of the total or cumulative number of mDNS service query messages that the Cisco DNA Center received from all SDG agents. The SDG agents send these messages to discover services for locally attached wired or wireless endpoints. The chart can be adjusted based on the date, time range, and minute interval providing deeper and more granular cumulative statistics counters within the provided time series. Two-layer average service query charts provide the following statistics:</p> <ul style="list-style-type: none"> <li>• <b>Processed:</b> Aggregated statistics for the Cisco Wide Area Bonjour classify and mark Processing for a complete flow of incoming service discovery request is successfully matched with policy permission and outgoing service distribution to all querying SDG agents.</li> <li>• <b>Dropped:</b> Aggregated statistics for the Cisco Wide Area Bonjour classify and mark Dropped for incoming service discovery request and policy permission has a mismatch from all querying SDG agents.</li> </ul>
Top Talkers	<p>A bar chart for top talkers across the Wide Area Bonjour domain. The top-talker charts are divided into the following categories to determine overall service scale count by instance, location, and type:</p> <ul style="list-style-type: none"> <li>• <b>Top Subdomain:</b> The top-five subdomains in the Wide Area Bonjour domain advertising the highest mDNS service instance count. The total service instance count is an aggregated value that may source from one or more SDG agent switches.</li> <li>• <b>Top SDG Agent:</b> The top-five SDG agent switches in the Wide Area Bonjour domain advertising the highest mDNS service instance count. The total service instance count is an aggregated value that may source from one or more downstream service peer devices.</li> <li>• <b>Top Service Instance:</b> The top-five mDNS service types in the Wide Area Bonjour domain with the highest service instance count. The total service instance count by service type may source through multiple subdomains, SDG agents, and service peer devices in the network.</li> </ul>

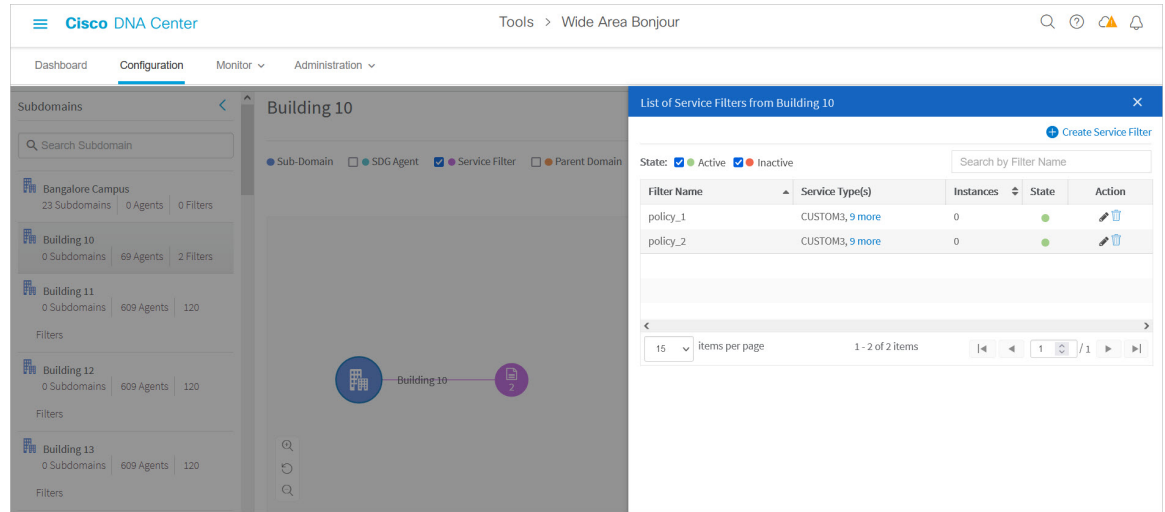
## Subdomain 360°

Network administrators can get a 360° statistics view of the subdomain and associated parameters from the Configuration tab. The 360° statistics provide information at the individual subdomain level instead of global-level visualization on the dashboard. The Subdomain 360° view lets you navigate the different levels of the hierarchical domain structure and verify the aggregated statistics for policy configuration, service instance count, and more.

The Subdomain 360° view can be grouped into two-level parameters for service filter policy and SDG agent of the selected subdomain.

The following figure shows the Subdomain 360° view for Service Filter statistics.

Figure 33: Subdomain 360° View for Service Filter



To open the Subdomain 360° view for service filter, complete the following steps.

- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
- Step 2** From the sidebar, select the subdomain.
- Step 3** Check the **Service Filter** check box to expand the hierarchy and verify the aggregated service filter counts for the selected subdomain.
- Step 4** Click the **Service Filter** icon to open the 360° panel and create a new service filter or verify information about an existing service filter, described as follows.

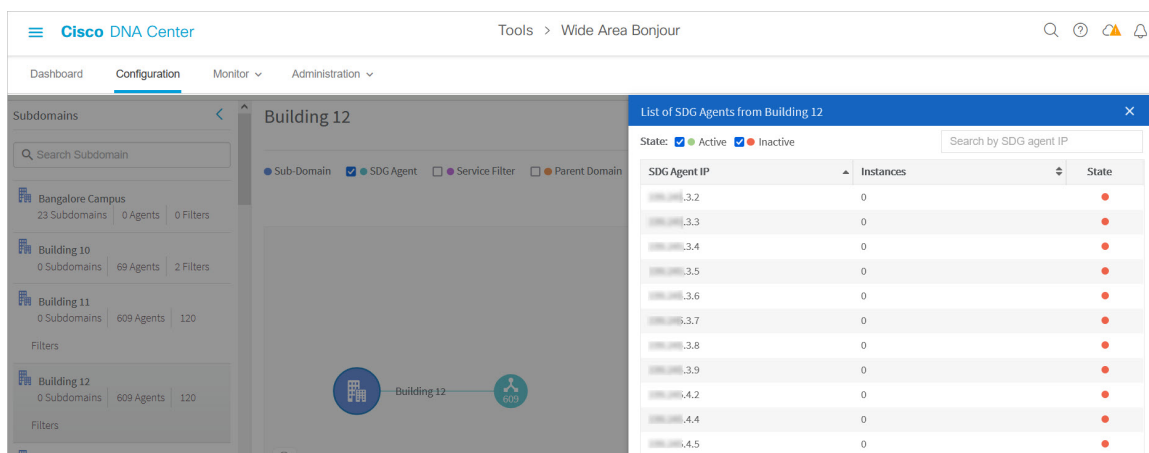
Management	Function
<b>Filter Name</b>	Displays the user-defined service filter name of the selected subdomain.
<b>Service Type(s)</b>	Displays a collapsed list of one or more permitted service types in the configured service filter. Click again to verify the expanded list.
<b>Instances</b>	Displays the aggregated service instance count permitted by the selected service filter.
<b>State</b>	Displays the status of the selected service filter. <ul style="list-style-type: none"> <li>• Green: The service filter is active and can perform service routing in the Wide Area Bonjour domain.</li> <li>• Red: The service filter is inactive and disabled by the network administrator for service routing in the Wide Area Bonjour domain.</li> </ul>
<b>Action</b>	Click the pencil icon to update an existing service filter. To delete a service filter, click the trash icon.
<b>Active</b>	Check the check box to filter the service filter list by Active state. The default state is checked.
<b>Inactive</b>	Check the check box to filter the service filter list by Inactive state. The default state is checked.

Management	Function
Search	Search for a service filter by exact name or initial characters.
Items per Page	Displays the service filter count per page. The range is from 15 to 75; the default is 15.

## Subdomain 360° View of an SDG Agent

The following figure shows the Subdomain 360° view for SDG agent statistics.

Figure 34: Subdomain 360° View for SDG Agent



To open the Subdomain 360° view for an SDG agent, complete the following steps.

- Step 1** Navigate to the **Configuration** tab in the Cisco Wide Area Bonjour application.
- Step 2** From the sidebar, select the subdomain.
- Step 3** Check the **SDG Agent** check box to expand the hierarchy and verify the aggregated SDG agent counts for the selected subdomain.
- Step 4** Click the **SDG Agent** icon to open the 360° panel and verify aggregated statistics and status for an existing SDG agent, described as follows.

Management	Function
SDG Agent IP	Displays the IPv4 address paired with Cisco Wide Area Bonjour for service routing with the SDG agent switch on the selected subdomain.
Instances	Displays the aggregated service instance count learned from the SDG agent configured in the source role.
State	Displays the service routing status between Cisco DNA Center and the SDG agent switches. <ul style="list-style-type: none"> <li>• Green: The SDG agent is reachable and service routing is in operational state to advertise and query mDNS services in the Wide Area Bonjour domain.</li> <li>• Red: The SDG agent is reachable or unreachable and service routing is nonoperational.</li> </ul>

Management	Function
Active	Check the check box to filter the SDG agent list by Active state. The default state is checked.
Inactive	Check the check box to filter the SDG agent list by Inactive state. The default state is checked.
Search	Enter the SDG agent IPv4 address to search by address or initial numerical value for multiple matching digits.
Items per Page	Displays the SDG agent count per page. The range is from 15 to 75; the default is 15.

## Wide Area Bonjour Monitor

The Cisco Wide Area Bonjour application provides detailed assurance capabilities for day-2 operations under the **Monitor** tab. The Monitor section is divided into three major categories. Each category provides unique information to manage service routing and instances from a single pane of glass in Cisco DNA Center.

### Monitor an SDG Agent

The **Monitor > SDG Agents** function provides a list of network devices associated to service policies of the Cisco Wide Area Bonjour application. The detailed view shows the communication path, role, state, and more. Network administrators can quickly determine the operational state and manually synchronize service instances from the selected source SDG agent.

The following figure shows how to monitor each associated SDG agent with the Cisco Wide Area Bonjour application for global service routing.

**Figure 35: Monitor SDG Agents**

The screenshot shows the Cisco DNA Center interface for monitoring SDG Agents. The breadcrumb navigation is 'Tools > Wide Area Bonjour'. The main navigation tabs are 'Dashboard', 'Configuration', 'Monitor', and 'Administration'. The 'Monitor' tab is active. The page title is 'SDG Agents' with a sub-note: 'Sync the device cache by selecting the available SDG-Agent.' There are controls for 'State' (Active/Inactive checkboxes), 'Refresh', 'Resync', and 'Filter'. The table below shows one agent with the following details:

SDG Agent	Management IP	Source Interface	Domain	Service Filter	Role(s)	Available Services	Reachability	State	Last Sync
10.10.10.10	10.10.10.10	Loopback0	Building 14	Assurance	Source	0	Reachable	Inactive (red dot)	2021-10-22 11:17:31

At the bottom, there is a pagination control showing '15 items per page' and '1 - 1 of 1 items'.

Network administrators can monitor and manage the status of each associated SDG agent switch in the network, described as follows.

Table 11: Monitor SDG Agent Functions

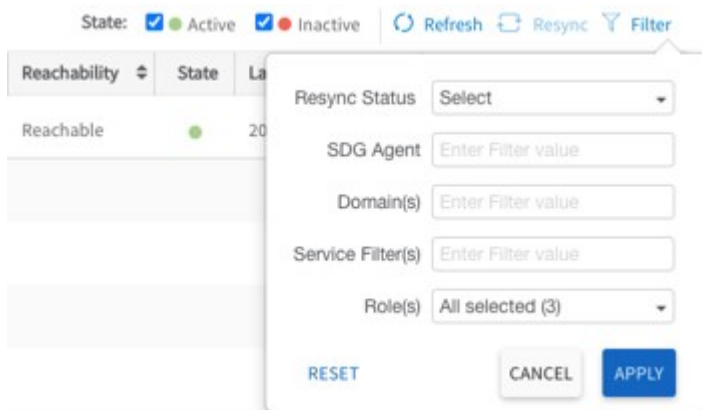
Management	Function
<b>SDG Agent IP</b>	The SDG agent IPv4 address paired with Cisco DNA Center for service routing in the Cisco Wide Area Bonjour application.
<b>Management IP</b>	The IPv4 address of the SDG agent switch paired with the Cisco DNA Center network inventory for device management.
<b>Source Interface</b>	The source interface ID (such as Loopback) used on the selected SDG agent for service routing with the Cisco Wide Area Bonjour application.
<b>Domain</b>	The subdomain name where the selected SDG agent is associated to support service routing.
<b>Service Filter(s)</b>	The collapsed view of one or more service filters associated with the selected SDG agent switch. Click more to view the full list.
<b>Role(s)</b>	<p>The SDG agent role can be verified as Source or Query across multiple service filters:</p> <ul style="list-style-type: none"> <li>• <b>Source:</b> The selected SDG agent is expected to connect service providers (such as Apple TV) and announce mDNS service instances to the Cisco Wide Area Bonjour application.</li> <li>• <b>Query:</b> The selected SDG agent is expected to connect service queriers (such as Apple iPad) and query mDNS service instances to the Cisco Wide Area Bonjour application.</li> </ul>
<b>Available Services</b>	The total dynamically received service instance count from the selected source SDG agent switch. The total count includes service instances in Active and Inactive states in the Cisco Wide Area Bonjour application.
<b>Reachability</b>	<p>The IP reachability between Cisco DNA Center and the selected SDG agent switch.</p> <ul style="list-style-type: none"> <li>• Green: The selected SDG agent is reachable and in managed state in the Cisco DNA Center device inventory.</li> <li>• Red: The selected SDG agent is unreachable or failed to reach managed state in the Cisco DNA Center device inventory.</li> </ul>
<b>State</b>	<p>The service routing status between Cisco DNA Center and the SDG agent switches.</p> <ul style="list-style-type: none"> <li>• Green: The SDG agent is reachable and service routing is in operational state to advertise and query mDNS services in the Wide Area Bonjour domain.</li> <li>• Red: The SDG agent is reachable or unreachable and service routing is nonoperational.</li> </ul>

Management	Function
<b>Last Sync</b>	The last date and time when Cisco Wide Area Bonjour automatically or manually synchronized the mDNS service instance with one or more source SDG agent switches.
<b>Resync</b>	<p>The Cisco Wide Area Bonjour application lets network administrators manually synchronize the mDNS service instance with one or more selected source SDG agent switches.</p> <ol style="list-style-type: none"> <li>1. Check the check box in the first column to select one or more SDG agents in the source role.</li> <li>2. Click the <b>Resync</b> button on the top-right side of the SDG agent table.</li> </ol>
<b>Resync Status</b>	<p>The mDNS service instance resynchronization status between the Cisco Wide Area Bonjour application and the source SDG agent switches in the network:</p> <ul style="list-style-type: none"> <li>• <b>Successful:</b> Complete mDNS service instance and respective information is fully synchronized between the Cisco Wide Area Bonjour application and the selected source SDG agent switches in the network.</li> <li>• <b>In Progress:</b> mDNS service instance synchronization is in progress between the Cisco Wide Area Bonjour application and the selected source SDG agent switches in the network.</li> <li>• <b>Failed:</b> Cisco Wide Area Bonjour failed to complete resynchronization of service instance information within the allotted time with one or more source SDG agent switches.</li> <li>• <b>Not Initiated:</b> Service routing with the source SDG agent is in nonoperational state, or the SDG agent is in a query role and service instance record resynchronization is not required.</li> </ul>
<b>Active</b>	Check the check box to filter the SDG agent list by Active state. The default state is checked.
<b>Inactive</b>	Check the check box to filter the SDG agent list by Inactive state. The default state is checked.
<b>Items per Page</b>	The SDG agent count per page. The range is from 15 to 75; the default is 15.

## SDG Agent Filter

In large-scale enterprise network environments, network administrators can filter the SDG agent list with variable parameters. The following figure shows the SDG agent filter.

Figure 36: SDG Agent Filter



- Step 1** Navigate to the **Monitor** tab in the Cisco Wide Area Bonjour application.
- Step 2** Expand the drop-down menu and choose **SDG Agent**.
- Step 3** Above the SDG agent table, click **Filter**.
- Step 4** Choose filter criteria as described in the following table.

Management	Function
<b>Resync Status</b>	Choose <b>Single</b> , <b>Multiple</b> , or <b>All</b> to filter source SDG agents by current resynchronization status.
<b>SDG Agent</b>	The source SDG agent IPv4 address used for service routing with the Cisco Wide Area Bonjour application.
<b>Domain(s)</b>	The subdomain name where the SDG agents are associated to support service routing.
<b>Service Filter(s)</b>	The service filter name where the SDG agents are associated to support service routing.
<b>Role(s)</b>	Choose <b>Source</b> , <b>Query</b> , or <b>All</b> to filter SDG agents by configured role.

- Step 5** Click **Apply**.

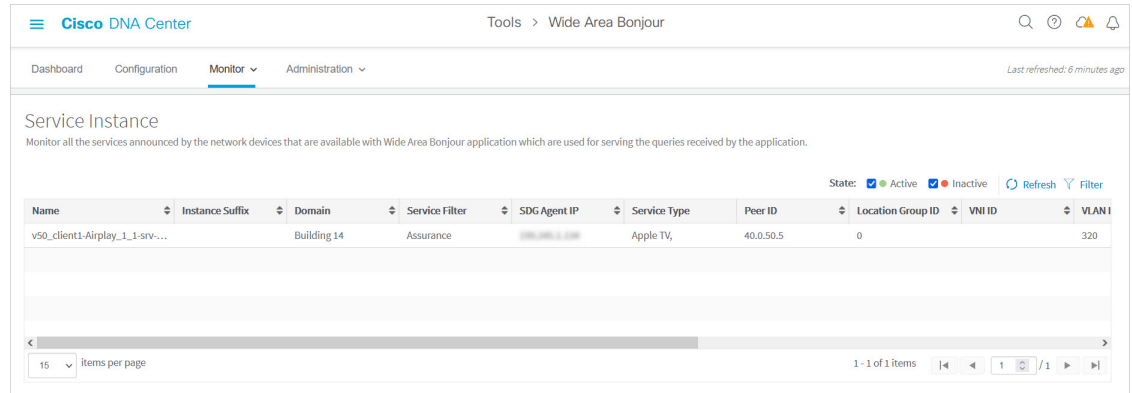
## Monitor Service Instance

Cisco DNA Center dynamically discovers network-wide service instances via service routing communication with source SDG agent switches. The **Service Instance** window provides detailed information of each instance and its respective address, location and routing state in the Wide Area Bonjour domain.

The following figure shows how to monitor dynamically discovered mDNS service instances from source SDG agent with Cisco Wide Area Bonjour application for global service routing.



Figure 37: Monitor Service Instance



Network administrators can monitor and manage the status of each associated service instance in the network, as shown in the following table.

Table 12: Monitor Service Instance Functions

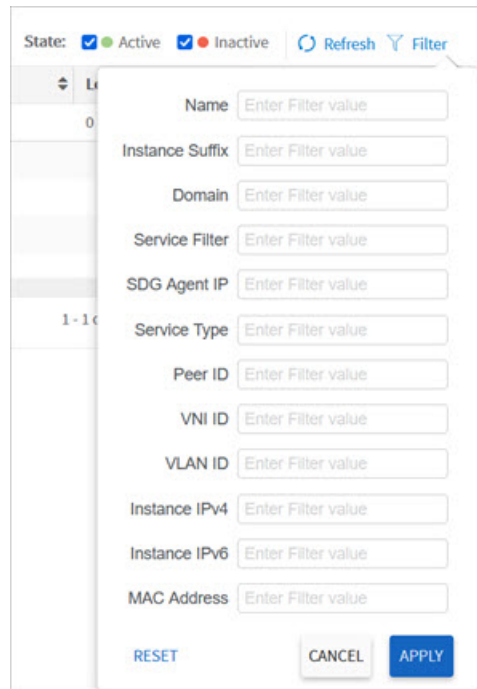
Management	Function
<b>Name</b>	The mDNS service provider-announced instance name across the Wide Area Bonjour domain, such as <i>FLI-Printer</i> .
<b>Instance Suffix</b>	The network administrator-appended text to the original announced mDNS instance name. For example, the <i>Zone1</i> suffix is added to the original instance name <i>FLI-Printer</i> and becomes <i>FLI-Printer-Zone1</i> .
<b>Domain(s)</b>	The source subdomain name where the service instance is discovered dynamically.
<b>Service Filter(s)</b>	The name of the service filter in which the policy is validated, and the service instance accepted from a valid source SDG agent switch.
<b>SDG Agent IP</b>	The IP address of the source SDG agent switch of the selected service instance.
<b>Service Type(s)</b>	The collapsed view of service types for the selected service instance. Click more to view the full list.
<b>Peer ID</b>	The IPv4 address of the first-hop Catalyst switch or wireless controller in the service peer role that is directly attached to the service provider. This peer announces the mDNS service in the Wide Area Bonjour domain through the intermediate source SDG agent switch. The entry is empty if the service instance learned from the service provider is attached to the SDG agent, or if the SDG agent is connected to an intermediate Layer 2 mDNS flood device to reach the service provider.
<b>Location Group ID</b>	The location group ID of the service instance.
<b>VNI ID</b>	The mDNS service instance sourced from the BGP EVPN Layer 2 or Layer 3 virtual network ID (VNI) from the SDG agent in overlay VXLAN tunnel endpoint (VTEP) or border network roles.

Management	Function
<b>VLAN ID</b>	The mDNS service instance discovered from the source SDG agent from a specific unicast-mode Layer 2 VLAN ID. The service instance discovered from mDNS flood mode is empty.
<b>TTL</b>	The Time-to-Live (TTL) value of mDNS service instance records announced by source SDG agent switches in the Wide Area Bonjour domain.
<b>Instance IPv4</b>	The IPv4 address announced in the mDNS A record by the selected source mDNS service instance.
<b>Instance IPv6</b>	The IPv6 address announced in the mDNS AAAA record by the selected source mDNS service instance.
<b>MAC Address</b>	The MAC address of the source mDNS service provider discovered and announced by the source SDG agent.
<b>State</b>	The mDNS service instance maintains the following routing states in the Cisco Wide Area Bonjour application: <ul style="list-style-type: none"> <li>• <b>Active:</b> The selected mDNS service instance is available with original source information and distributed when queried in the Wide Area Bonjour domain.</li> <li>• <b>Inactive:</b> The selected mDNS service instance is unavailable from the original source information and is not distributed when queried in the Wide Area Bonjour domain.</li> </ul>
<b>Active</b>	Check the check box to filter the service instance list by Active state. The default state is checked.
<b>Inactive</b>	Check the check box to filter the service instance list by Inactive state. The default state is checked.
<b>Items per Page</b>	The service instance count per page. The range is from 15 to 75; the default is 15.

## Service Instance Filter

In large-scale enterprise network environments, you can filter the service instance list with variable parameters. The following figure shows the service instance filter.

Figure 38: Service Instance Filter



- Step 1** Navigate to the **Monitor** tab in the Cisco Wide Area Bonjour application.
- Step 2** Expand the drop-down list and choose **Service Instance**.
- Step 3** Above the service instance table, click **Filter**.
- Step 4** Choose one of following the filter criteria.

Management	Function
<b>Name</b>	Search by the exact service filter name or search by initial characters.
<b>Instance Suffix</b>	Search by the exact instance suffix name or search by initial characters.
<b>Domain(s)</b>	Search by the exact subdomain name or search by initial characters.
<b>Service Filter(s)</b>	Search by the exact service filter name or search by initial characters.
<b>SDG Agent IP</b>	Enter the SDG Agent IPv4 address to search by address, or enter initial numerical values for multiple matching digits.
<b>Service Type(s)</b>	Search by the exact service type or search by initial characters.

Management	Function
Peer ID	Enter the source service peer switch or wireless controller IPv4 address to search by address, or enter initial numerical values for multiple matching digits.
VNI ID	Enter the source BGP EVPN Layer 2 or Layer 3 VNI ID to search by ID, or enter initial numerical values for multiple matching digits. The range is from 4096 to 16777215.
VLAN ID	Enter the unicast mode source Layer 2 VLAN ID to search by ID, or enter initial numerical values for multiple matching digits. The range is from 1 to 4094.
Instance IPv4	Enter the source service instance IPv4 address to search by address, or enter initial numerical values for multiple matching digits.
Instance IPv6	Enter the source service instance IPv6 address to search by address, or enter initial numerical values for multiple matching digits.
MAC Address	Enter the source service instance MAC address name to search by MAC address, or enter initial numerical values for multiple matching digits. The supported format is <i>00:00:00:00:00</i> .

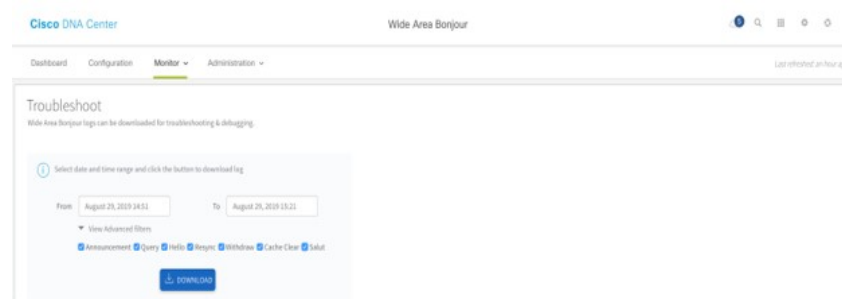
**Step 5** Click **Apply**.

## Troubleshoot the Cisco Wide Area Bonjour Application

The Cisco Wide Area Bonjour application supports built-in troubleshooting capabilities that allow network administrators to debug service routing, discovery, and distribution problems in the network. You can collect troubleshooting logs from the Cisco DNA Center back end at various levels based on a date and time range. Troubleshooting reports are generated in simple CSV format and downloaded locally to review problems based on selected logging level parameters.

Troubleshooting reports are also useful to share with Cisco support. The following figure shows the **Troubleshoot** window of the Cisco Wide Area Bonjour application.

Figure 39: Cisco Wide Area Bonjour Application Troubleshoot Window



- Step 1** Navigate to the **Monitor** tab in the Cisco Wide Area Bonjour application.
- Step 2** From the drop-down menu, choose **Troubleshoot**.
- Step 3** Choose the **From** and **To** dates to download log files for a specific date range to your local computer.
- Step 4** Choose advanced filter criteria as described in the following table, then click **Download**.

Advanced Filter Type	Description
<b>Announcement</b>	Choose <b>Announcement</b> when the SDG agent-announced services cannot be found on Cisco DNA Center.
<b>Query</b>	Choose <b>Query</b> when wired or wireless users cannot see remote services from Cisco DNA Center.
<b>Hello</b>	Choose <b>Hello</b> when the service routing peering session between Cisco DNA Center and the SDG agent is unstable or cannot be established.
<b>Resync</b>	Choose <b>Resync</b> when manual service resynchronization is triggered from Cisco DNA Center to one or more SDG agents.
<b>Withdraw</b>	Choose <b>Withdraw</b> to collect information when the source SDG agent sends a service withdrawal message to prevent global distribution.
<b>Cache Clear</b>	Choose <b>Cache Clear</b> to collect logs for all service withdrawal messages from the SDG agent with a manual CLI step.
<b>Salut</b>	Choose <b>Salut</b> for initial communication messages between the SDG agent and Cisco DNA Center.





## APPENDIX **A**

# Configure SDG Agents and Service Peers Through the Cisco DNA Center Template Editor Tool

---

- [About SDG Agent and Service Peer Configuration Through the Cisco DNA Center Template Editor Tool, on page 103](#)
- [Tag Cisco Catalyst and Cisco Nexus SDG Agent Switches, on page 103](#)
- [Build Bonjour Policy CLI Templates, on page 104](#)
- [Create a Cisco Catalyst and Cisco Nexus Switch Network Profile, on page 115](#)
- [Provision Cisco Service Discovery Gateway Bonjour Policies, on page 117](#)

## About SDG Agent and Service Peer Configuration Through the Cisco DNA Center Template Editor Tool

The Cisco Wide Area Bonjour application on Cisco DNA Center does not push configurations to the SDG agent switches or service peer devices automatically. The SDG agents and service peers need to be configured either manually or through templates created by the template editor in Cisco DNA Center.

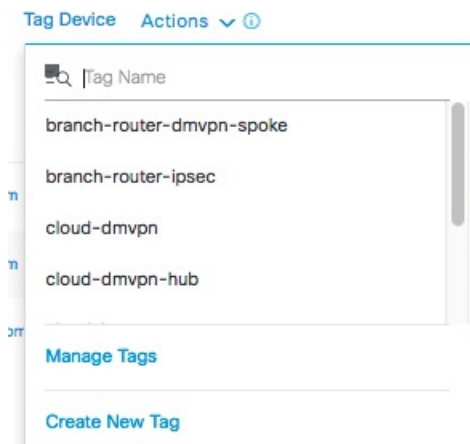
This section explains how to create templates for deploying SDG agents and service peers. The exact IP addresses, VLANs, and service types used in the template vary based on the deployment. You can add or remove service types as necessary.

## Tag Cisco Catalyst and Cisco Nexus SDG Agent Switches

You can create a tag and apply it to your SDG agents to make it easy to identify the switches when selecting templates to apply to them.

- 
- Step 1** Click the menu icon (☰) and choose **Provision > Inventory**.
- Step 2** Check the associated check box to choose the SDG agents that you want to tag.
- Step 3** Click **Tag Device**.

The following image shows the **Tag Device** drop-down list.

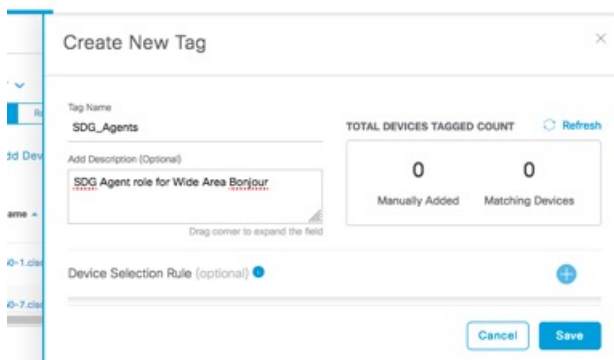


**Step 4** From the drop-down list, choose the tag with which you want to tag the selected SDG agent.

If you need to create a tag, complete the following steps:

- a. Click **Create New Tag**.
- b. Enter the name of the tag and an optional description.

The following image shows the filled-in **Create New Tag** screen.



- c. (Optional) To set device selection rules, expand the **Device Selection Rules** section.
- d. Click **Save**.

The tag is created.

**Step 5** Click **Apply**.

The tag is applied to the selected SDG agents.

## Build Bonjour Policy CLI Templates

The following sections provide information about the various tasks to build Bonjour policy CLI templates.



## Configure SDG Agents and Service Peers for Traditional Routed Access Networks

- Step 1** From Click the menu icon (☰) and choose **Tools > Template Editor**.
- Step 2** In the Template Editor in Cisco DNA Center, click the settings icon to the right of a Day-N project.
- Step 3** From the drop-down list, click **Add Template**.
- Step 4** In the **Add New Template** screen, under **Template Type**, choose **Regular Template**.
- Step 5** Enter a **Name** and **Description** for the template.
- Step 6** Enter a tag for the switches to which the template needs to be added.
- Step 7** Choose the **Device Type** to which the template will be applicable.
- Step 8** Enter the **Software Type**.
- Step 9** Click **Add**.
- Step 10** Under the **Provision** page, choose the project under which the newly created template exists.
- Step 11** Click the template name.
- Step 12** In the **Template** screen, enter the CLI commands that the template needs to push to the SDG agent switches and service peer devices.

The following is a sample set of CLI commands:

```
mdns-sd gateway
  rate-limit 100
!
mdns-sd service-list INGRESS-SERVICE-LIST IN
  match apple-tv
  match printer-ipp
  match printer-ipps
  match apple-airprint
  match web-server
  match apple-screen-share
  match apple-rdp
  match printer-lpd
  match apple-window-fileshare
  match apple-continuity
!
mdns-sd service-list WIDE-AREA-SERVICE-LIST OUT
  match apple-tv
  match printer-ipp
  match printer-ipps
  match apple-airprint
  match web-server
  match apple-screen-share
  match apple-rdp
  match printer-lpd
  match apple-windows-fileshare
  match apple-continuity
!
mdns-sd service-policy LOCAL_AREA_POLICY
  service-list INGRESS-SERVICE-LIST IN
  service-list EGRESS-SERVICE-LIST OUT
!
mdns-sd service-list EGRESS-SERVICE-LIST OUT
  match apple-tv
```

```

match printer-ipp
match printer-ipps
match apple-airprint
match web-server
match apple-screen-share
match apple-rdp
match printer-lpd
match apple-windows-fileshare
match apple-continuity
!

mdns-sd service-policy WIDE_AREA_POLICY
service-list WIDE-AREA-SERVICE-LIST OUT
!

service-export mdns-sd controller DNAC
controller-address <DNAC IP>
controller-service-policy WIDE_AREA_POLICY OUT
controller-source-interface Loopback0
!

vlan configuration 101-103
mdns-sd gateway
service-policy LOCAL_AREA_POLICY
active-query timer 60
source-interface Vlan4001
transport both
service-mdns-query ptr
!
```

You can apply or delete `match <service-type>` statements in the service-lists according to your deployment requirements.

**Note** Replace the VLAN with one or more VLANs that are specific to your deployment.

**Step 13** In the **Actions** drop-down menu, click **SAVE**.

**Step 14** In the **Actions** drop-down menu, click **COMMIT**.

The Template Editor provides the additional flexibility of customizing templates in multiple ways. You can use template variables and provision-time (text or form-based) data input. For more information about working with the Template Editor tool, see the *Cisco DNA Center User Guide*.

---

## Configure SDG Agents on Traditional Multilayer Networks

---

**Step 1** Click the menu icon (☰) and choose **Tools > Template Editor**.

**Step 2** In the Template Editor in Cisco DNA Center, click the settings icon to the right of Day-N project.

**Step 3** From the drop-down list, click **Add Template**.

**Step 4** In the **Add New Template** screen, under **Template Type**, choose **Regular Template**.

**Step 5** Enter a **Name** and **Description** for the template.

**Step 6** Enter the tag for the switches to which the template needs to be added.

**Step 7** Choose the **Device Type** to which the template applies.

**Step 8** Enter the **Software Type**.

**Step 9** Click **Add**.

**Step 10** Under the **Provision** page, choose the project under which the newly created template exists.

**Step 11** Click the template name.

**Step 12** In the **Template** screen, enter the CLI commands that the template needs to push to the SDG agent switches.

The following is a sample set of CLI commands.

```
mdns-sd gateway
  rate-limit 100
!
mdsn-sd service-list INGRESS-SERVICE-LIST IN
  match apple-tv
  match printer-ipp
  match printer-ipps
  match apple-airprint
  match web-server
  match apple-screen-share
  match apple-rdp
  match printer-lpd
  match apple-windows-fileshare
  match apple-continuity
!
mdns-sd service-list EGRESS-SERVICE-LIST OUT
  match apple-tv
  match printer-ipp
  match printer-ipps
  match apple-airprint
  match web-server
  match apple-screen-share
  match apple-rdp
  match printer-lpd
  match apple-windows-fileshare
  match apple-continuity
!
mdns-sd service-list WIDE-AREA-SERVICE-LIST OUT
  match apple-tv
  match printer-ipp
  match printer-ipps
  match apple-airprint
  match web-server
  match apple-screen-share
  match apple-rdp
  match printer-lpd
  match apple-windows-fileshare
  match apple-continuity
!

mdns-sd service-policy LOCAL_AREA_POLICY
  service-list INGRESS-SERVICE-LIST IN
  service-list EGRESS-SERVICE-LIST OUT
!
mdns-sd service-policy WIDE_AREA_POLICY
  service-list WIDE-AREA-SERVICE-LIST OUT
!
service-export mdns-sd controller DNAC
  controller-address <DNAC IP>
  controller-service-policy WIDE_AREA_POLICY OUT
  controller-source-interface Loopback()
!

vlan configuration 101-103
mdns-sd gateway
!
```

You can add or delete `match <service-type>` statements in the service-lists according to your deployment requirements.

**Note** Replace the VLAN with one or more VLANs that are specific to your deployment.

**Step 13** In the **Actions** drop-down menu, click **SAVE**.

**Step 14** In the **Actions** drop-down menu, click **COMMIT**.

The Template Editor provides the additional flexibility of customizing templates in multiple ways. You can use template variables and provision-time (text or form-based) data input. For more information about working with the Template Editor tool, see the *Cisco DNA Center User Guide*.

## Configure Service Peers on Traditional Multilayer Networks

**Step 1** Click the menu icon (☰) and choose **Tools > Template Editor**.

**Step 2** In the Template Editor in Cisco DNA Center, click the settings icon to the right of a Day-N project.

**Step 3** From the drop-down list, choose **Add Template**.

**Step 4** In the **Add New Template** screen, under **Template Type**, choose **Regular Template**.

**Step 5** Enter a **Name** and a **Description** for the template.

**Step 6** Enter the tag for the switches to which the template needs to be added.

**Step 7** Choose the **Device Type** to which the template applies.

**Step 8** Enter the **Software Type**.

**Step 9** Click **Add**.

**Step 10** Under the **Provision** page, choose the project under which the newly created template exists.

**Step 11** Click the template name.

**Step 12** In the **Template** screen, enter the CLI commands that the template needs to push to the service peer devices.

The following is a sample set of CLI commands.

```
mdns-sd gateway
 mode service-peer
  rate-limit 100
!
mdns-sd service-list INGRESS-SERVICE-LIST IN
 match apple-tv
 match printer -ipp
 match printer -ipps
 match apple-airprint
 match web-server
 match apple-screen-share
 match apple-rdp
 match printer-lpd
 match apple-windows-fileshare
 match apple-continuity
!
mdns-sd service-list EGRESS-SERVICE-LIST OUT
 match apple-tv
 match printer-ipp
 match printer-ipps
 match apple-airprint
 match web-server
```

```

match apple-screen-share
match apple-rdp
match pinter-lpd
match apple-windows-fileshare
match apple-continuity
!

mdns-sd service-policy LOCAL_AREA_POLICY
  service-list INGRESS-SERVICE-LIST IN
  service-list EGRESS-SERVICE-LIST OUT
!

vlan configuration 101-103
mdns-sd gateway
  service-policy LOCAL_AREA_POLICY
  active-query timer 60
  source-interface Vlan4001
  service-mdns-query ptr
  transport both
  sdg-agent 40.1.1.1
!

```

You can add or delete `match <service-type>` statements in the service-lists according to your deployment requirements.

**Note** Replace the VLAN with one or more VLANs that are specific to your deployment.

**Step 13** In the **Actions** drop-down menu, click **SAVE**.

**Step 14** In the **Actions** drop-down menu, click **COMMIT**.

The Template Editor provides the additional flexibility of customizing templates in multiple ways. You can use template variables and provision-time (text or form-based) data input. For more information about working with the Template Editor tool, see the *Cisco DNA Center User Guide*.

## Configure SDG Agents on Distributed Anycast Gateway Without Service Peers

**Step 1** Click the menu icon (☰) and choose **Tools > Template Editor**.

**Step 2** In the Template Editor in Cisco DNA Center, click the settings icon to the right of a Day-N project.

**Step 3** From the drop-down list, choose **Add Template**.

**Step 4** In the **Add New Template** screen, under **Template Type**, choose **Regular Template**.

**Step 5** Enter a **Name** and **Description** for the template.

**Step 6** Enter the tag for the switches to which the template needs to be added.

**Step 7** Choose the **Device Type** to which the template applies.

**Step 8** Enter the **Software Type**.

**Step 9** Click **Add**.

**Step 10** Under the **Provision** page, choose the project under which the newly created template exists.

**Step 11** Click the template name.

**Step 12** In the **Template** screen, enter the CLI commands that the template needs to push to the SDG agent switches and service peer networks.

The following is a set of sample CLI commands.

```

mdns-sd gateway
  rate-limit 100
!
mdns-sd service-list INGRESS-SERVICE-LIST IN
  match apple-tv
  match printer-ipp
  match printer-ipps
  match apple-airprint
  match web-server
  match apple-screen-share
  match apple-rdp
  match printer-lpd
  match apple-windows-fileshare
  match apple-continuity
!
mdns-sd service-list EGRESS-SERVICE-LIST OUT
  match apple-tv
  match printer-ipp
  match printer-ipps
  match apple-airprint
  match web-server
  match apple-screen-share
  match apple-rdp
  match printer-lpd
  match apple-windows-fileshare
  match apple-continuity
!
mdns-sd service-list WIDE-AREA-SERVICE-LIST OUT
  match apple-tv
  match printer-ipp
  match printer-ipps
  match apple-airprint
  match web-server
  match apple-screen-share
  match apple-rdp
  match printer-lpd
  match apple-windows-fileshare
  match apple-continuity
!
mdns-sd service-policy LOCAL_AREA_POLICY
  service-list INGRESS-SERVICE-LIST IN
  service-list EGRESS-SERVICE-LIST OUT
!
mdns-sd service-policy WIDE_AREA_POLICY
  service-list WIDE-AREA-SERVICE-LIST OUT
!
service-export mdns-sd controller DNAC
  controller-address <DNAC IP>
  controller-service-policy WIDE_AREA_POLICY OUT
  controller-source-interface Loopback0
!

vlan configuration 101-103
member evpn-instance 1 vni 10001
mdns-sd gateway
  service-policy LOCAL_AREA_POLICY
  active-query timer 60
  source-interface Vlan4001
  transport both
  service-mdns-query ptr
!

```

You can add or delete `match <service-type>` statements in the service-lists according to your deployment requirements.

**Note** Replace the VLAN with one or more VLANs that are specific to your deployment.

**Step 13** In the **Actions** drop-down menu, click **SAVE**.

**Step 14** In the **Actions** drop-down menu, click **COMMIT**.

The Template Editor provides the additional flexibility of customizing templates in multiple ways. You can use template variables and provision-time (text or form-based) data input. For more information about working with the Template Editor tool, see the *Cisco DNA Center User Guide*.

---

## Configure SDG Agents on a Distributed Anycast Gateway with a Service Peer

---

**Step 1** Click the menu icon (☰) and choose **Tools > Template Editor**.

**Step 2** In the Template Editor in Cisco DNA Center, click the settings icon to the right of a Day-N project.

**Step 3** From the drop-down list, choose **Add Template**.

**Step 4** In the **Add New Template** screen, under **Template Type**, choose **Regular Template**.

**Step 5** Enter a **Name** and **Description** for the template.

**Step 6** Enter the tag for the switches to which the template needs to be added.

**Step 7** Choose the **Device Type** to which the template applies.

**Step 8** Enter the **Software Type**.

**Step 9** Click **Add**.

**Step 10** Under the **Provision** page, choose the project under which the newly created template exists.

**Step 11** Click the template name.

**Step 12** In the **Template** screen, enter the CLI commands that the template needs to push to the SDG agent switches.

The following is a sample set of CLI commands.

```
mdns-sd gateway
  rate-limit 100
!
mdns-sd service-list INGRESS-SERVICE-LIST IN
  match apple-tv
  match printer-ipp
  match printer-ipps
  match apple-airprint
  match web-server
  match apple-screen-share
  match apple-rdp
  match printer-lpd
  match apple-windows-fileshare
  match apple-continuity
!
mdns-sd service-list EGRESS-SERVICE-LIST OUT
  match apple-tv
  match printer-ipp
  match printer-ipps
  match apple-airprint
  match web-server
  match apple-screen-share
  match apple-rdp
  match printer-lpd
```

```

    match apple-windows-fileshare
    match apple-continuity
    !
mdns-sd service-list WIDE-AREA-SERVICE-LIST OUT
    match apple-tv
    match printer-ipp
    match printer-ipps
    match apple-airprint
    match web-server
    match apple-screen-share
    match apple-rdp
    match printer-lpd
    match apple-windows-fileshare
    match apple-continuity
    !

mdns-sd service-policy LOCAL_AREA_POLICY
    service-list INGRESS-SERVICE-LIST IN
    service-list EGRESS-SERVICE-LIST OUT
    !
mdns-sd service-policy WIDE_AREA_POLICY
    service-list IDE-AREA-SERVICE-LIST OUT
    !
service-export mdns-sd controller DNAC
    controller-address <DNAC IP>
    controller-service-policy WIDE_AREA_POLICY OUT
    controller-source-interface Loopback0
    !

vlan configuration 101-103
    member evpn-instance 1 vni 10001
    mdns-sd gateway
    !

```

You can add or delete `match <service-type>` statements in the service-lists according to your deployment requirements.

**Note** Replace the VLAN with one or more VLANs that are specific to your deployment.

**Step 13** In the **Actions** drop-down menu, click **SAVE**.

**Step 14** In the **Actions** drop-down menu, click **COMMIT**.

The Template Editor provides the additional flexibility of customizing templates in multiple ways. You can use template variables and provision-time (text or form-based) data input. For more information about working with the Template Editor tool, see the *Cisco DNA Center User Guide*.

---

## Configure Service Peers on a Distributed Anycast Gateway Multilayer Network

---

**Step 1** Click the menu icon (☰) and choose **Tools > Template Editor**.

**Step 2** In the Template Editor in Cisco DNA Center, click the settings icon to the right of the Day-N project.

**Step 3** From the drop-down list, choose **Add Template**.

**Step 4** In the **Add New Template** screen, under **Template Type**, choose **Regular Template**.

**Step 5** Enter a **Name** and a **Description** for the template.

**Step 6** Enter the tag for the switches to which the template needs to be added.



- Step 7** Choose the **Device Type** to which the template applies.
- Step 8** Enter the **Software Type**.
- Step 9** Click **Add**.
- Step 10** Under the **Provision** page, choose the project under which the newly created template exists.
- Step 11** Click the template name.
- Step 12** In the **Template** screen, enter the CLI commands that the template needs to push to the service peer devices.

The following is a sample set of CLI commands:

```
mdns-sd gateway
 mode service-peer
  rate-limit 100
!
mdns-sd service-list INGRESS-SERVICE-LIST IN
 match apple-tv
 match printer-ipp
 match printer-ipps
 match apple-airprint
 match web-server
 match apple-screen-share
 match apple-rdp
 match printer-lpd
 match apple-windows-fileshare
 match apple-continuity
!
mdns-sd service-list EGRESS-SERVICE-LIST OUT
 match apple-tv
 match printer-ipp
 match printer-ipps
 match apple-airprint
 match web-server
 match apple-screen-share
 match apple-rdp
 match printer-lpd
 match apple-windows-fileshare
 match apple-continuity
!
mdns-sd service-policy LOCAL_AREA_POLICY
 service-list INGRESS-SERVICE-LIST IN
 service-list EGRESS-SERVICE-LIST OUT
!
vlan configuration 101-103
mdns-sd gateway
 service-policy LOCAL_AREA_POLICY
 active-query timer 60
 source-interface Vlan4001
 service-mdns-query ptr
 transport both
 sdg-agent 40.1.1.1
!
```

You can add or delete `match <service-type>` statements in the service-lists according to your deployment requirements.

**Note** Replace the VLAN with one or more VLANs that are specific to your deployment.

- Step 13** In the **Actions** drop-down menu, click **SAVE**.
- Step 14** In the **Actions** drop-down menu, click **COMMIT**.

The Template Editor provides the additional flexibility of customizing templates in multiple ways. You can use template variables and provision-time (text or form-based) data input. For more information about working with the Template Editor tool, see the *Cisco DNA Center User Guide*.

## Configure SDG Agents on a Centralized Gateway Network

- Step 1** Click the menu icon (☰) and choose **Tools > Template Editor**.
- Step 2** In the Template Editor in Cisco DNA Center, click the settings icon to the right of a Day-N project.
- Step 3** From the drop-down list, choose **Add Template**.
- Step 4** In the **Add New Template** screen, under **Template Type**, choose **Regular Template**.
- Step 5** Enter a **Name** and **Description** for the template.
- Step 6** Enter the tag for the switches to which the template needs to be added.
- Step 7** Choose the **Device Type** to which the template applies.
- Step 8** Enter the **Software Type**.
- Step 9** Click **Add**.
- Step 10** Under the **Provision** page, choose the project under which the newly created template exists.
- Step 11** Click the template name.
- Step 12** In the **Template** screen, enter the CLI commands that the template needs to push to the SDG agent switches.

```
mdns-sd gateway
 ingress-client query-suppression enable
 rate-limit 100
!
mdns-sd service-list INGRESS-SERVICE-LIST IN
 match apple-tv
 match printer-ipp
 match printer-ipps
 match apple-airprint
 match web-server
 match apple-screen-share
 match apple-rdp
 match printer-lpd
 match apple-windows-fileshare
 match apple-continuity
!
mdns-sd service-list EGRESS-SERVICE-LIST OUT
 match apple-tv
 match printer-ipp
 match printer-ipps
 match apple-airprint
 match web-server
 match apple-screen-share
 match apple-rdp
 match printer-lpd
 match apple-windows-fileshare
 match apple-continuity
!
mdns-sd service-list WIDE-AREA-SERVICE-LIST OUT
 match apple-tv
 match printer-ipp
 match printer-ipps
```

```

match apple-airprint
match web-server
match apple-screen-share
match apple-rdp
match printer-lpd
match apple-windows-fileshare
match apple-continuity
!

mdns-sd aervice-policy LOCAL_AREA_POLICY
  service-list INGRESS-SERVICE-LIST IN
  service-list EGRESS-SERVICE-LIST OUT
!
mdns-sd service-policy WIDE_AREA_POLICY
  service-list WIDE-AREA-SERVICE-LIST OUT
!
service-export mdns-sd controller DNAC
  controller-address <DNAC IP>
  controller-service-policy WIDE_AREA_POLICY OUT
  controller-source-interface Loopback0
!

vlan configuration 101
member evpn-instance 1 vni 10001
!
interface vlan 101
mdns-sd gateway
  service-policy LOCAL_AREA_POLICY
  active_query timer 60
  transport both
!

```

You can add or delete `match <service-type>` statements in the service-lists according to your deployment requirements.

**Note** Replace the VLAN with one or more VLANs that are specific to your deployment.

**Step 13** In the **Actions** drop-down menu, click **SAVE**.

**Step 14** In the **Actions** drop-down menu, click **COMMIT**.

The Template Editor provides the additional flexibility of customizing templates in multiple ways. You can use template variables and provision-time (text or form-based) data input. For more information about working with the Template Editor tool, see the *Cisco DNA Center User Guide*.

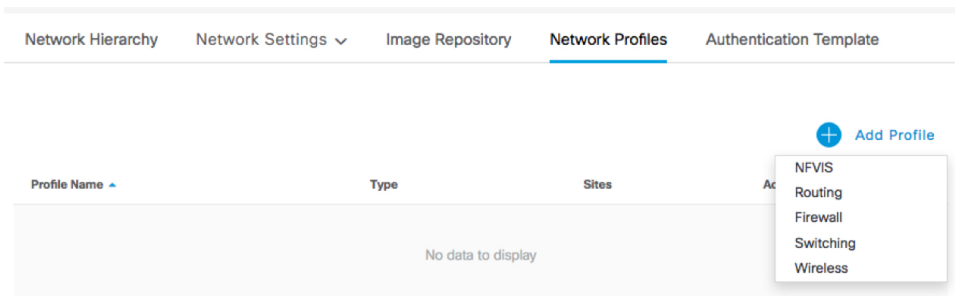
## Create a Cisco Catalyst and Cisco Nexus Switch Network Profile

With Cisco DNA Center, you can create a network profile for SDG agents and assign templates to them. This step creates a network profile for the SDG agents, and assigns both the templates created in the previous steps to the template. The network profile will be used to provision the SDG agents later.

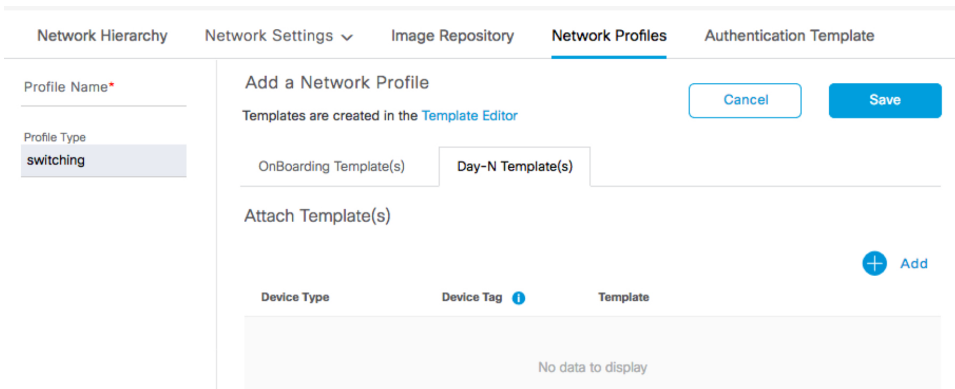
**Step 1** Click the menu icon (☰) and choose **Design > Network Profiles**.

**Step 2** Click **Add Profile** and choose **Switching**.

Configure SDG Agents and Service Peers Through the Cisco DNA Center Template Editor Tool



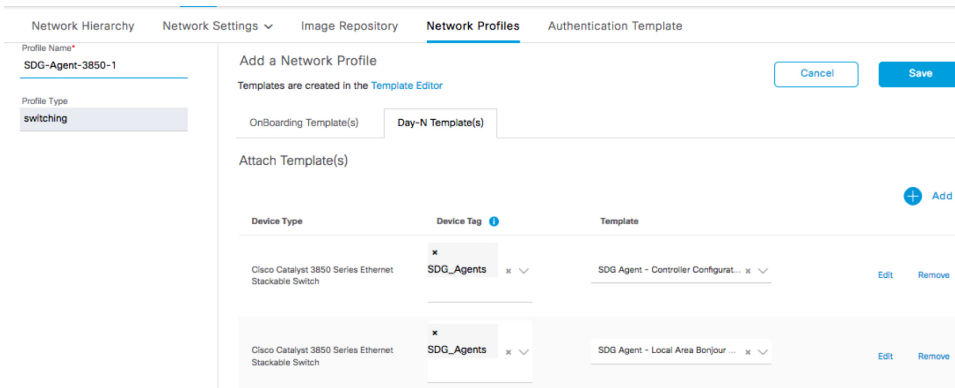
The following window is displayed.



**Step 3** Click the **Day-N Template(s)** tab.

**Step 4** Click **Add**.

**Step 5** From the drop-down lists, choose the **Device Type**, **Device Tag**, and **Template** for the network profile that you want to create.



**Step 6** To add another template, click **Add**.

**Step 7** Click **Save**.

# Provision Cisco Service Discovery Gateway Bonjour Policies

Provisioning the Cisco SDG Bonjour policies pushes the CLI configurations of the two templates assigned to the network profile, enabling the switch to process Bonjour announcements and queries, and to forward them to the Wide Area Bonjour Controller.

---

- Step 1** Click the menu icon (☰) and choose **Provision > Inventory**.
- Step 2** Check the check box of the device to provision.
- Step 3** From the **Actions** drop-down list, choose **Provision > Provision Device**.
- Step 4** Enter the details of the site and click **Next**.
- Step 5** Choose the devices for which to fill out the provisioning parameters and click **Next**.
- Step 6** Review the details and ensure that both the required templates are listed under **Template Name**, then click **Deploy**.
- Step 7** Choose **Now** to provision the template immediately, or choose **Later** to schedule the provisioning for a later date.
- Step 8** Click **Apply**.

You can monitor the provisioning status from the **Inventory** page with the **Focus** set to **Provision**.

---

