

Cisco DNA Service for Bonjour Solution®

Q. What are the traditional Cisco® Bonjour gateway solutions?

A. There are two different Cisco Bonjour gateway solutions:

- Cisco IOS® Service Discovery Gateway (SDG) is a Bonjour gateway solution running on a Cisco IOS Software-based system. It is typically deployed on Cisco Catalyst® switches at the Layer 2 or Layer 3 network boundaries of local LAN and WLAN networks.
- Cisco AireOS multicast DNS (mDNS) snooping is a Bonjour gateway solution running on a Cisco AireOS Wireless LAN Controller (WLC). It is used to provide a Bonjour solution for wireless endpoints.

Q. What are some of the primary Cisco IOS and AireOS Bonjour gateway deployment challenges?

A. The traditional software design of a Cisco IOS and AireOS WLC Bonjour gateway have the following challenges:

- Disjoint solutions: Both solutions operate independently. There is no interoperability support to build end-to-end Bonjour solutions in enterprise networks.
- Single gateway: Both solutions provide a local Bonjour proxy function between local VLANs and subnets. However, they do not support or scale enough beyond a single Bonjour gateway device.
- Limited discovery and boundary: The end user get a very limited discovery and distribution boundary because of the single gateway solution in LAN or WLAN networks.
- Limited scale: The centralized software design might introduce system and network performance challenges in large-scale network environments.

Q. What is Cisco's new Bonjour gateway solution?

A. Cisco has introduced the industry's newest and only end-to-end solution, called Cisco DNA™ Service for Bonjour. This solution consists of two key components:

- Wide-area Bonjour app: A centralized controller app running on the Cisco DNA Center™ appliance providing software-defined networking (SDN) functions by enabling access-controlled Bonjour service discovery and distribution in enterprise networks.
- SDG agent: The Cisco Catalyst® switch providing IP and Bonjour gateway function at the Layer 2 or Layer 3 network boundary for distributed service processing.

Q. What is the distributed architecture in the Cisco DNA Service for Bonjour solution?

A. The new Cisco DNA Service for Bonjour solution offers a distributed service architecture that operates in two tightly integrated network domains:

- Local-area SDG: The Cisco Catalyst switches at the Layer 2 and Layer 3 network boundary serve as SDGs for local proxy functions between VLANs. The Bonjour endpoints can be on LANs or WLANs.
- Wide-area SDG: The new controller and agent-based solution with a distributed processing architecture operates over regular IP networks. The Cisco Wide Area Bonjour controller app functionality is paired with Cisco Catalyst switches in agent role. The controller app is supported on the Cisco DNA Center physical appliance.

- Q.** How does the Cisco DNA Service for Bonjour enable end-to-end service discovery and distribution?
- A.** The controller and agent devices across the network form a simple, secure, and lightweight Bonjour control session that enables policy-based Bonjour service discovery and distribution over the IP network.
- Q.** Does the Cisco Bonjour SDG agent extend mDNS over an IP network?
- A.** No. The mDNS boundary remains limited to the Layer 2 and Layer 3 network. To protect the performance on an IP network, no tunnels or extensions are used to enable the DNA service for Bonjour solution. The SDG agent switches export a local cache database based on their configured export policies.
- Q.** What are the primary benefits of the Cisco DNA Service for Bonjour solution?
- A.** The new Cisco DNA Service for Bonjour solution offers the following primary benefits:
- **End-to-end:** The new Bonjour solution extends Cisco IOS Software SDG capabilities beyond a single gateway device. Each Cisco Catalyst switch in the Layer 2 and Layer 3 network boundary can be deployed in an SDG agent role that centrally communicates with the SDG controller to enable end-to-end Bonjour service discovery and distribution across the enterprise network.
 - **Scalable:** The new distributed Bonjour gateway architecture enables a highly scalable solution. The seamless integration of Bonjour service minimizes adverse effects to existing network applications and performance. DNA Center can be deployed with multiple instances of the Wide Area Bonjour app to increase multidimensional scale and performance.
 - **Secure:** The new solution provides multitier policy based service discovery and distribution in local-area and wide-area domains. The trusted communication between the controller and agent makes sure that the services and queries are processed based on IT-defined access lists for controlled network environments.
 - **Resilient:** The solution provides resiliency at the system, network, controller, and application levels. Such software design helps assure the availability and reachability of service during planned or unplanned failures.
 - **Managed:** The Cisco DNA Service for Bonjour controller app provides wide-area Bonjour policy and service management with a single pan view.
- Q.** What are the primary functions of the Cisco IOS local-area SDG agent switch?
- A.** There are four primary functions of the Cisco IOS local-area SDG agent switch:
- **Policy:** The Cisco Catalyst switch in the local-area SDG domain enables access controlled Bonjour service discovery and query processing between a local VLAN and subnet. Without explicit access control configuration, all Bonjour communications are filtered automatically.
 - **Cache:** The SDG agent switch snoops the Bonjour service announcement from the source endpoint (i.e. Apple TV, Google Chromecast, and so on) and adds it to a local cache database. Each SDG agent switch can hold a large number of cache entries in its local table.
 - **Timer:** The SDG agent switch locally maintains service timer Time to Live (TTL) from each source endpoint. Each source endpoint announces the time-to-live (TTL) value for each record during service advertisement.
 - **Local proxy:** The SDG agent enables a local proxy function between VLANs and subnets. When the SDG agent receives a Bonjour query from a different VLAN, it provides a local proxy response based on a local cache table.

Q. What are the system components of the Cisco DNA Service for Bonjour solution?

A. Table 1 shows the Cisco DNA Service for Bonjour solution hardware and software matrix.

Table 1. Cisco Wide Area Bonjour hardware and software matrix

Role	Product	Modules	Software
Controller platform	Cisco DNA Center physical appliance	DN1-HW-APL DN1-HW-APL-L DN1-HW-APL-XL	1.3.1.0
Controller app	Wide Area Bonjour app	-	
Agent	Cisco Catalyst 9600 Series		16.11.0
	Cisco Catalyst 9500 Series	-	16.11.0
	Cisco Catalyst 9400 Series	Sup1 and Sup1XL	16.11.0
	Cisco Catalyst 9300 Series	-	16.11.0
	Cisco Catalyst 6807-XL and 6500 Series	Sup Module 6T and Sup Module 2T	15.5(1)SY4
	Cisco Catalyst 6880X Series	-	15.5(1)SY4
	Cisco Catalyst 4500E Series	Sup Module 8E	3.11.0
	Cisco Catalyst 4500X Series	-	3.11.0
	Cisco Catalyst 3850/3650 Series	-	16.11.0
	Cisco Catalyst 3850-XS Series	-	16.11.0
	Cisco ISR 4000 Series	-	
WLC	Cisco 9800 WLC	-	16.11.0
	Cisco AireOS WLC	-	8.x and above

Q. What are the software license requirements to implement the Cisco DNA Service for Bonjour solution?

A. Table 2 lists the Cisco DNA Service for Bonjour solution software license requirements.

Table 2. Cisco DNA Service for Bonjour solution software license matrix

Role	Product	Local Area Bonjour	Wide Area Bonjour
Controller platform	Cisco DNA Center physical appliance	-	-
Controller app	Wide Area Bonjour app	-	-
Agent	Cisco Catalyst 9600, 9500, 9400 and 9300 Series	DNA Essential	DNA Advantage
	Cisco Catalyst 6807-XL, 6800X and 6500 Series	IP Base	Adv Enterprise Services + DNA Addon
	Cisco Catalyst 4500E / 4500X Series	IP Base	IP Services + DNA Addon
	Cisco Catalyst 3850//3850-XS/3650 Series	DNA Essential	DNA Advantage
	Cisco Catalyst 2960 X	LAN Base	-
	Cisco Catalyst 2960 XR	IPLite	-
	Cisco ISR 4000 Series	IP Base	Appx
WLC	Cisco 9800 WLC	-	-
	Cisco AireOS WLC	-	-

- Q.** Where can the Cisco IOS local-area SDG agent switch be deployed in the network?
- A.** The typical deployment for the Cisco IOS local-area SDG is at the Layer 2 and Layer 3 network boundary of LANs and WLANs. The Cisco Catalyst switch that provides the IP gateway function for wired and wireless devices can provide the Bonjour gateway function on the same network block.
- Q.** What is the role of the Cisco WLC in the DNA Service for Bonjour solution?
- A.** The Cisco IOS or AireOS based WLC has two primary functions in the new Cisco DNA Service for Bonjour solution:
- Multicast pass-through: The Cisco WLC must be enabled with wireless and access point multicast DNS frames, allowing pass-through between the SDG agent and wireless Bonjour endpoints.
 - Link local bridging: The mDNS communication is optimized with the Cisco link local bridging function, which prevents anchoring mDNS traffic in Layer 2 roam situations.
- Q.** Is Cisco WLC mDNS snooping required in the Cisco DNA Service for Bonjour solution?
- A.** No. Cisco WLC mDNS snooping is not required in the Cisco DNA Service for Bonjour solution. It is recommended that the user keeps it disabled, or mDNS frames will not get pass-through between the LAN and WLAN network by the Cisco WLC.
- Q.** Does Cisco DNA Service for Bonjour requires Multicast enabled in the network?
- A.** To enable end-to-end Bonjour services there is no requirement to enable Multicast on wired or wireless client network. However, the Cisco WLC must be configured with AP Multicast mode to Multicast, and all the Cisco Access-Point must join the WLC advertised Multicast group.
- Q.** What wireless deployment models are supported in the Cisco DNA Service for Bonjour solution?
- A.** The Cisco DNA Service for Bonjour solution can be deployed in all models:
- Centralized: The SDG agent switch connecting to Cisco WLC can process all wireless Bonjour communications with wireless endpoints. The Bonjour gateway function is enabled on wireless client VLANs and subnets.
 - Cisco FlexConnect®: The Layer 2 and Layer 3 Cisco Catalyst gateway switch for LAN and WLAN users can be deployed in SDG agent mode. The Bonjour gateway function at Distribution layer switch is enabled on all required can provide service discovery and distribution between wired and wireless clients for VLANs.
 - Cisco Mobility Express®: The Bonjour solution support for Cisco Mobility Express® supports the same design and deployment procedure as described in above Cisco FlexConnect® model.
- Q.** Is the Cisco DNA Service for Bonjour solution compatible with Cisco Meraki™ wireless networks?
- A.** Yes. Cisco Meraki wireless networks can be deployed with the Cisco DNA Service for Bonjour solution. The Layer 2 and Layer 3 gateway (Cisco Catalyst switch for LAN and WLAN) supports Bonjour functionality with Cisco Meraki wireless networks. Similar to Cisco WLC, it is recommended that you keep Bonjour forwarding disabled, permitting mDNS traffic to pass between the wireless client VLAN and LANs and WLANs.
- Q.** What endpoint types are supported in the new Cisco DNA Service for Bonjour solution?
- A.** Any wired or wireless endpoints that support multicast DNS based on the RFC 6762 specification are supported in the Cisco DNA Service for Bonjour solution.

- Q.** Is any new app or configuration change needed on user endpoint to work with the Cisco DNA Service for Bonjour solution?
- A.** No. The solution is transparent to the endpoints, so no new app or special configuration is required on endpoints to browse and use Bonjour services across the network infrastructure.
- Q.** What different Catalyst switching system mode types are supported to be in SDG agent role?
- A.** The Cisco Catalyst switch can be deployed in SDG agent role in any of the following system modes:
- Standalone – In this default mode, the single system manages its own control, management and data planes that possibly may have integrated redundancy. Each standalone system individually represents the SDG agent role in the network.
 - StackWise-480 – The SDG agent role is unified as single logical gateway when more than one Cisco Catalyst switches are physically paired with stack-cable providing system and network level redundancy.
 - StackWise-Virtual – The SDG agent role is unified as a single logical gateway when two Cisco Catalyst switches are paired using network cables providing system and network level redundancy. The classic Cisco Catalyst 6800 series and 4500 platforms supports similar system virtualization using Virtual Switching System (VSS) mode.
- Q.** How do the SDG agent switch and controller app communicate over the IP network?
- A.** The SDG agent switch and controller app communicate over a new service-routing protocol known as Bonjour Control Protocol (BCP). The Cisco BCP is a simple, secure, and lightweight protocol that operates over TCP to use built-in reliability for seamless operation over LAN or WAN infrastructure.
- Q.** What changes on existing routing protocol are needed to support new Cisco BCP service-routing protocol?
- A.** No change to existing unicast or multicast routing protocol required, as the Cisco BCP protocol integration is seamless. The controller configuration on Cisco SDG agent automatically enables service-routing with controller app and it remains transparent to all intermediate systems.
- Q.** What is the default TCP port number for the BCP protocol? Can it be changed?
- A.** The default source and destination TCP port number for BCP protocol is 9991. This TCP port number cannot be changed.
- Q.** What is the source IP address used by the SDG agent switch to form the BCP connection with the controller app?
- A.** The network administrator must explicitly select the source IP interface to communicate with the controller app. For a reliable communication, Cisco recommends the use the loopback interface to establish the BCP connection with the controller app.
- Q.** Can the Cisco DNA Service for Bonjour solution work across firewall?
- A.** Yes. The firewall must permit TCP port 9991 communication to enable BCP communication between the SDG agent switch and the controller app.
- Q.** Does the Cisco DNA Service for Bonjour solution support IPv6-based service discovery and distribution?
- A.** Yes. The SDG agent switch and controller app supports IPv6 Bonjour service discovery, distribution, and query processing across LAN and WLAN environments.

- Q.** Will the DNA Center controller app be in the data path between the Bonjour source and receiver endpoints?
- A.** No. The app handles the global service discovery and distribution process. It does not communicate with endpoints and is not involved in the data path flow. The data communication between the Bonjour source and receiver endpoints for accessing Bonjour service follows the network forwarding tables and policies.
- Q.** Can an SDG agent switch have service-routing to multiple controller apps for redundancy?
- A.** No. The SDG agent switch can only be configured with a single controller app. Controller redundancy can be easily achieved using the DNA Center high-availability cluster and multi-instance app solution.
- Q.** How does the SDG agent switch and controller app maintain the trusted session?
- A.** BCP supports “keep alive” between the SDG agent switch and controller app to maintain the session. By default, the “hello” messages are exchanged between the SDG agent switch and controller app at 15-second intervals. If a “hello” message is not received within four “hello” message intervals, after 60 seconds, the BCP session is considered to be down.
- Q.** What happens to services on the controller app if the BCP session goes down?
- A.** The controller app marks all Bonjour services announced by an SDG agent switch as inactive after it detects that the BCP connection is down. The inactive Bonjour services are blocked from global distribution, providing an up-to-the-minute refreshed service response across the wide-area Bonjour domain.
- Q.** How can the SDG agent switch and the controller app establish the session with security?
- A.** The BCP session can be configured using Message Digest 5 (MD5) authentication. The network administrator can enable MD5 authentication and configure the key to communicate with all SDG agents in a wide-area Bonjour domain.
- Q.** Can a non-authorized SDG agent switch establish a BCP connection with the controller app?
- A.** The controller app establishes a BCP session with the SDG agent switch based on policy configuration. The controller app rejects establishing the TCP state with an unknown SDG agent switch to support access-controlled and secure communication in the network.
- Q.** What are the default Differentiated Services Code Point (DSCP) settings for BCP?
- A.** Based on RFC 4594, the BCP performs the network control function. Hence, based on the industry standard recommendations, the default DSCP 48 (CS6) is set for BCP by the SDG agent switch and controller app. The DSCP value cannot be altered unless it is modified by an intermediate system in the network.
- Q.** How does the access-controlled Bonjour SDG service work in this solution?
- A.** The Bonjour service discovery, distribution, and query process is performed based on an IT-defined access control list in local-area and wide-area Bonjour domains. The policy can be more granular based on IPv4 and IPv6 network addresses to support role-based and location-based Bonjour service processing from each SDG agent switch.
- Q.** How does local-area Bonjour policy work on the SDG agent switch?
- A.** To implement a secure and controlled Bonjour service solution, the Cisco Catalyst switch supports bidirectional policy control in a local-area domain:

- Ingress service policy: The service policy is enforced at each Switch Virtual Interface (SVI) level where the Bonjour source or receiver endpoints are locally connected and within its Layer 2 and Layer 3 network. Based on policy, the service announcements and query messages are processed or filtered.
 - Egress service policy: If an egress service policy is configured on the SVI, then it enables a local proxy function and sends a Bonjour announcement response from the local cache database. If this egress service policy is not applied, then no Bonjour service response message is transmitted (for example, in a VLAN where only Bonjour sources such as Apple TVs and printers are connected, the egress service policy is not required because there are no receivers in such a VLAN).
- Q.** How does wide-area Bonjour policy work on the SDG agent switch and the controller app?
- A.** To enable end-to-end Bonjour service distribution, the wide-area Bonjour policy configuration is required to be implemented on the SDG agent and the controller app. The policy must be implemented as follows:
- SDG agent switch: The egress service policy on the SDG agent switch is enforced towards the centralized controller to enable controlled services export from the local table, and to perform global service lookup. Based on policy, the messages are processed or filtered before being sent to the controller app.
 - Wide Area Bonjour app: The service filter on the SDG controller defines the policy-based Bonjour source discovery and distribution. The service filter is based on the “tuple” of the Bonjour source and query SDG agents. If the query for a service matches the tuple, then the controller app distributes the available cache from its database to the querying query the SDG agent; otherwise, it drops the request.
- Q.** How does the tuple-based Bonjour policy work on the controller app?
- A.** The tuple in the service filter contains three primary parameters: service type, SDG agent IP, and network (any or specific address). For secure communication, these tuple values must match with the policy on controller app to accept the Bonjour source from a specified SDG agent and send the response to another specific SDG agent. Table 3 illustrates a sample policy configuration.

Table 3. Sample controller app service policy configuration

Service Type: Apple TV		
SDG Agent Switch	Source	Query
SDG agent IP	1.1.1.1	1.1.1.2
Service network address	Any	Any

In this sample service policy configuration, the Apple TV service announcement will be permitted from SDG agent 1.1.1.1 regardless of the IPv4/IPv6 subnet of Apple TV. Similarly, the controller app will accept service query requests from SDG agent 1.1.1.2 regardless of the IPv4/IPv6 subnet of the Bonjour requesting endpoint. If a query matches this policy, then the controller app will distribute Apple TV information learned from 1.1.1.1 to the 1.1.1.2 SDG agent.

- Q.** How does the Cisco DNA Service for Bonjour solution function with two IP/SDG gateways for each VLAN?
- A.** The Cisco DNA Service for Bonjour solution is by default a Hot Standby Router Protocol (HSRP)-aware solution. The SDG agent function is active and processes on an SVI only if the HSRP state is active. The SDG function remains inactive on standby HSRP interfaces.

- Q.** What is the BCP state between the SDG agent HSRP active and standby switch and the controller app?
- A.** The BCP connection from both the HSRP active and standby switch to the controller app remains operational. However, only the HSRP active switch provides Bonjour service discovery and distribution in the local-area and wide-area Bonjour domains.
- Q.** How quickly does the SDG agent role transition from inactive to active after the original HSRP active switch failure?
- A.** The SDG agent transitions to active as quickly as HSRP role switchover is triggered. The convergence time depends on default or user defined HSRP timer configuration.
- Q.** How does policy work when the Bonjour source and receiver are in the same Layer 2 VLAN network?
- A.** In a single Layer 2 broadcast domain, the multicast DNS frames are forwarded to all hosts based on a basic flood-and-learn algorithm. In such a case, the Bonjour gateway function is ineffective and cannot be controlled by the SDG agent switch or the controller app.
- Q.** Is the SDG Stateful Switchover (SSO)-capable feature available on the SDG agent switch and on the controller app?
- A.** The SSO capability varies between the SDG agent switch and the controller app:
- SDG agent switch: Not supported in current software releases. Upon SSO, the new active supervisor module sends a periodic query message to relearn the cache and update the local database.
 - Wide Area Bonjour app: Supported. The Bonjour cache is SSO synchronized across all hosts in the DNA Center High-Availability (HA) cluster. The TCP state will reset with a new host; however, the cache will be protected across all devices.
- Q.** How does the role-based Bonjour service function in the Cisco DNA Service for Bonjour solution?
- A.** The role-based Bonjour service discovery and distribution function is based on how the network administrator segments the workgroup users and devices into separate logical networks. The logical segmentation can be done statically or dynamically for LAN and WLAN networks:
- Static: The traditional model to statically assign a VLAN and subnet on port groups. This deployment model cannot distinguish between users and endpoints to logically segment and enable policy-based service discovery and distribution. The static assignment on LAN and WLAN varies.
 - LAN: The network administrator provides an open connection by statically configuring a port group to the specific VLAN of a Layer 2 switch.
 - WLAN: The network administrator provides a static or dynamic interface to all access points or a specific access point group of Service Set Identifiers (SSIDs).
 - Dynamic: The secure model to dynamically assign a VLAN and subnet based on central authentication and authorization policy with a AAA server (for example, Cisco Identity Services Engine). The dynamic assignment on LAN and WLAN network varies.
 - LAN: The network administrator can configure dynamic VLAN policy in a AAA server on a switchport. The Bonjour policy on an SDG agent switch (LAN) must be preconfigured on the authorized wired client SVI interface.
 - WLAN: The network administrator can enable AAA override with Change of Authorization (CoA) to automatically assign a dynamic interface to authorized workgroup users or endpoints. The Bonjour policy on an SDG agent switch (WLAN) connected to a Cisco WLC must be preconfigured on the authorized wireless client SVI interface.

- Q.** How does the location-based Bonjour service function in the Cisco DNA Service for Bonjour solution?
- A.** The Cisco DNA Service for Bonjour solution supports Bonjour service discovery and distribution based on a combination of service type, SDG agent IP, and IPv4/IPv6 network address. Hence, the location-based service function is based on Bonjour source and query subnet plans. The service location is tied to SDG agent placement in the network and subnet plan for wired and wireless networks.
- Q.** How does the service name conflict resolution work in the local-area Bonjour domain?
- A.** The Bonjour service name conflict occurs when two Bonjour source endpoints advertise service using the same instance name. The resolution mechanics in a local-area Bonjour domain depends on whether a conflicting name is in the same or a different VLAN of an SDG agent switch.
- Same VLAN resolution: When two or more Bonjour source endpoints announce services with a same name and in the same VLAN, the endpoints can self-detect and resolve the conflict. The last Bonjour source endpoint will automatically append a number at the end of the original instance name to de-duplicate itself.
 - Different VLAN resolution: The local proxy function resolves name conflicts between VLANs of the same SDG agent switch. This proxy response from an SDG agent switch to a new Bonjour source VLAN will append the number of its original instance name. This solves service instance conflict between two source endpoints even if they are in different VLANs of the same SDG agent switch.
- Q.** How does service name conflict resolution work in the wide-area Bonjour domain?
- A.** The Cisco DNA Service Bonjour solution supports suffix instance to de-duplicate the Bonjour service instance name across the global network. The suffix instance is a simple text that the network administrator can configure on each SVI of an SDG agent switch for appending to the advertised Bonjour name of the source. The suffix instance text is enforced after name conflict resolution in the local-area Bonjour domain.
- Q.** How does service name conflict resolution work in a multi-home configuration?
- A.** Some Bonjour source endpoints such as laptops or desktops can be dual-homed on LANs and WLANs connecting to two separate SDG agent switches. In such a case, the unique suffix instance name on each SDG agent switch helps the end user easily identify the same Bonjour source across a global network.
- Q.** Does SDG Agent switch support SNMP MIB to poll statistics?
- A.** Yes. The Cisco Catalyst Switch supports a new SNMP MIB CISCO-SDG-MDNS-MIBS to collect mDNS statistics from local-area and wide-area Bonjour domains.
- Q.** What is the domain in the controller app?
- A.** The root domain is a logical configuration and service boundary, consisting of a single wide-area Bonjour controller app (standalone or HA cluster), SDG agent switch, service filters, and Bonjour service records. The wide-area Bonjour boundary is limited to a single domain and cannot communicate or share the Bonjour cache or query with other domains.
- Q.** What is the subdomain in the controller app?
- A.** The subdomain is a logical entity or branch of the root domain that can consist of a group of SDG agent switches and their associated service filters and record information. A subdomain can consist of child subdomains to build a multitier logical configuration structure. The flexible configuration model can be used to identify geographical locations such as sites, building numbers, floors, and so on.

- Q.** Does the Cisco DNA Service for Bonjour domain change the original advertised “.local” in the Bonjour service instance name?
- A.** No. Cisco DNA Service for Bonjour does not modify the original “.local” domain advertisement by source endpoints.
- Q.** What is Selective Service Instance feature?
- A.** The Selective Service Instance feature can provide a single or multiple Bonjour service instance query response based on user-defined MAC address in wide-area Bonjour domain. The policy can be filtered to distribute services from selective sources instead of complete IP subnet.
- Q.** How can a user backup DNAC and Bonjour App policy configurations?
- A.** The network administrator can backup configurations using the following two methods:
- Controller Backup – The Cisco DNA Controller system backup in a global backup and restore option that can be performed to include all Applications, policy configurations and settings applied on the system.
 - Wide-Area Bonjour Policy Backup – The Bonjour Domain policy configurations can be exported and downloaded in XLS format to local device. The policies can be restored using the import function in the App.

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