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**mDNS Implementation**

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# Laerdal Medical

## Cisco WLC AirOS

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## 1 Deployment Considerations

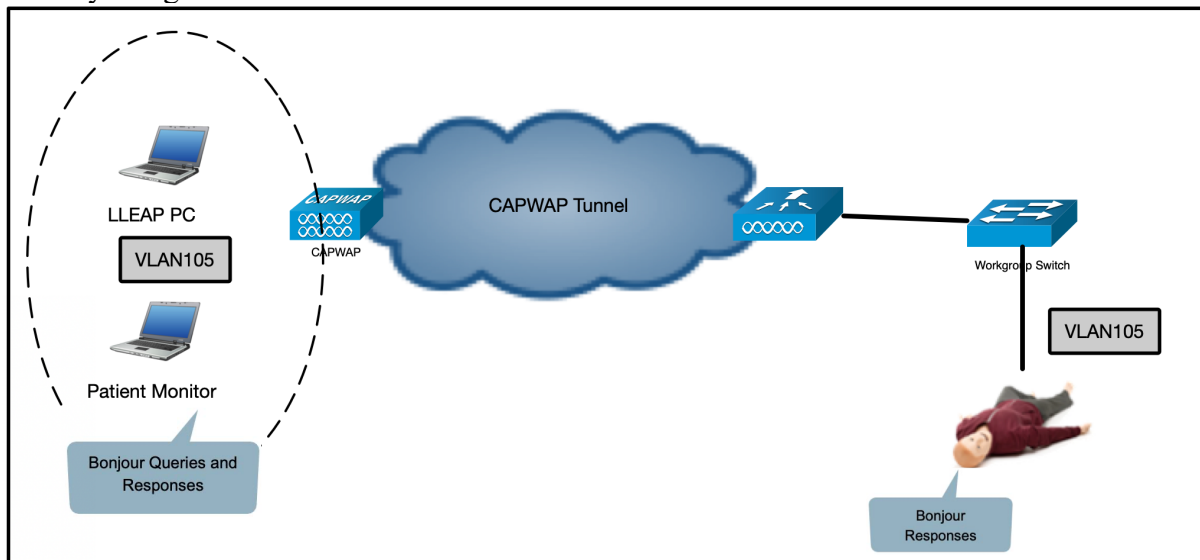
Bonjour protocol operates on service announcements and service queries which allow devices to ask and advertise specific applications such as:

- SimMan3G
- Patient Monitor
- LinkBox
- Session Viewer
- iTunes Wireless iDevice Syncing
- 

Each query or advertisement is sent to the Bonjour multicast address for delivery to all clients on the subnet. Apple's Bonjour protocol relies on mDNS operating at UDP port 5353 and each query or advertisement are sent to the following reserved group addresses:

- IPv4 Group Address – 224.0.0.251
- IPv6 Group Address – FF02::FB

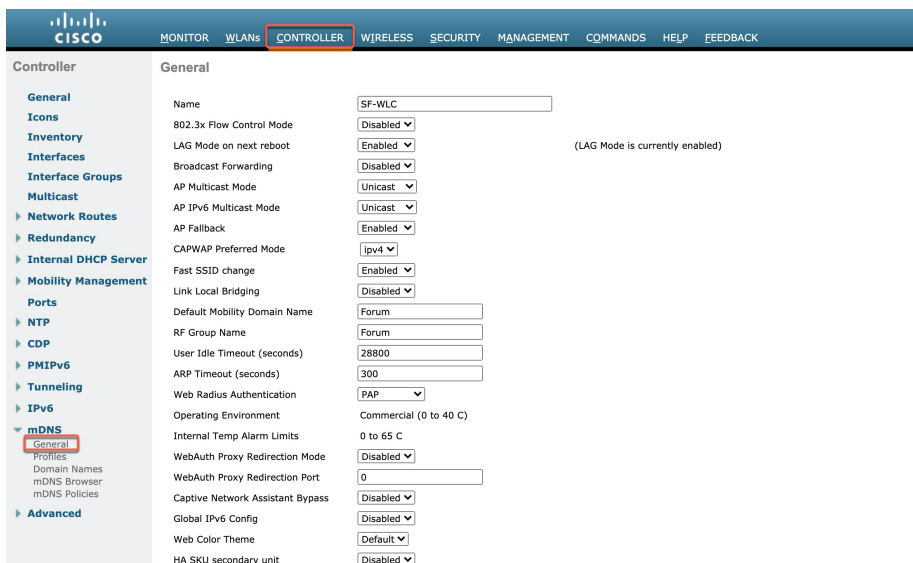
The addresses used by the Bonjour protocol are link-local multicast addresses and thus are only forwarded on the local L2 domain. Routers cannot use multicast routing to redirect the traffic because the time to live (TTL) is set to one, and link-local multicast is meant to stay local by design.



## 1.1 Cisco Wireless LAN Controller (WLC)

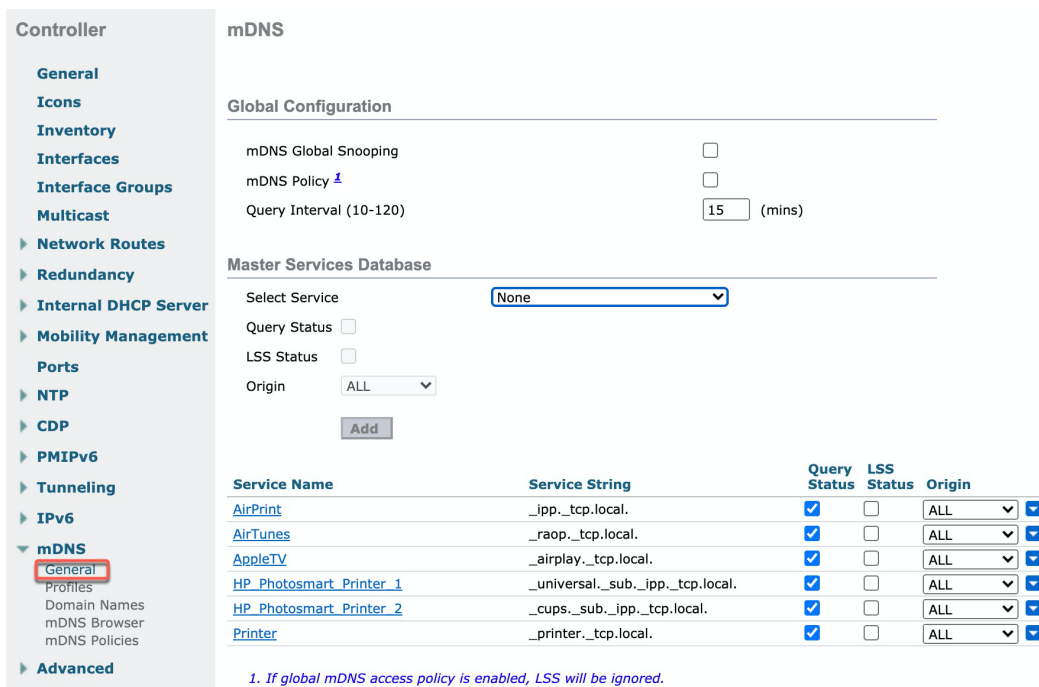
On the Cisco Wireless LAN Controller the Bonjour services are not advertised by default on access points that are configured in the mode local. In order for the WLC to advertise the mDNS services that the Laerdal Medical simulation devices advertise. The custom mDNS strings must be added to the WLC configuration.

The following outlines how to add mDNS strings to the WLC:



## 1.2 General Panel

Under the General Panel custom mDNS service strings can be added.



Select other from the drop down menu and enter the custom mDNS service information.

The screenshot shows the mDNS configuration interface. On the left is a navigation menu with 'mDNS' selected. The main area is titled 'mDNS' and contains 'Global Configuration' and 'Master Services Database' sections.

**Global Configuration:**

- mDNS Global Snooping:
- mDNS Policy: [1](#)
- Query Interval (10-120):  (mins)

**Master Services Database:**

Select Service:  Query Status:  LSS Status:  Origin:

A dropdown menu is open, showing the following options: None, AirTunes, Apple File Sharing Protocol(AFP), Scanner, FTP, NFS, iTunes Music Sharing, iTunes Wireless Device Syncing, Apple Remote Desktop, Apple CD/DVD Sharing, Time Capsule Backup, and **Other** (highlighted).

Service Name	Service String	Query Status	LSS Status	Origin
<a href="#">AirPrint</a>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL
<a href="#">AirTunes</a>	_raop._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL
<a href="#">AppleTV</a>	_airplay._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL
<a href="#">HP_Photosmart_Printer_1</a>	_universal._sub._ipp._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL
<a href="#">HP_Photosmart_Printer_2</a>	_cups._sub._ipp._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL
<a href="#">Printer</a>	_printer._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL

To enable mDNS advertisements “mDNS Global Snooping” must be enabled.

Note: Origin by default is set to “ALL” which includes wired and wireless connections.

This screenshot highlights specific configuration elements with red boxes:

- Global Configuration:** 'mDNS Global Snooping' is checked.
- Master Services Database:** 'Select Service' is set to 'Other'. The 'Service Name' is 'Screen\_Capture' and the 'Service String' is '\_http.\_tcp.local.'.
- Origin:** The 'Origin' dropdown is open, showing 'ALL', 'WIRELESS', and 'WIRED' options.

Service Name	Service String	Query Status	LSS Status	Origin
<a href="#">AirPrint</a>	_ipp._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL
<a href="#">AirTunes</a>	_raop._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL
<a href="#">AppleTV</a>	_airplay._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL
<a href="#">HP_Photosmart_Printer_1</a>	_universal._sub._ipp._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL
<a href="#">HP_Photosmart_Printer_2</a>	_cups._sub._ipp._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL
<a href="#">Printer</a>	_printer._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL

1. If global mDNS access policy is enabled, LSS will be ignored.

**Important Note:** All mDNS service strings that are entered on the WLC must include the “.local.” ending to be consider a valid service string.

After the custom service has been added to the WLC. The next step is to add the mDNS service to a mDNS profile. This mDNS profile must be associated to the wireless network that will be used by the simulation devices.

Service Name	Service String	Query Status	LSS Status	Origin
<a href="#">AirPrint</a>	_ipp._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL <input type="button" value="v"/>
<a href="#">AirTunes</a>	_raop._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL <input type="button" value="v"/>
<a href="#">AppleTV</a>	_airplay._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL <input type="button" value="v"/>
<a href="#">HP Photosmart Printer 1</a>	_universal._sub._ipp._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL <input type="button" value="v"/>
<a href="#">HP Photosmart Printer 2</a>	_cups._sub._ipp._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL <input type="button" value="v"/>
<a href="#">Printer</a>	_printer._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL <input type="button" value="v"/>
<a href="#">Screen Capture</a>	_http._tcp.local.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALL <input type="button" value="v"/>

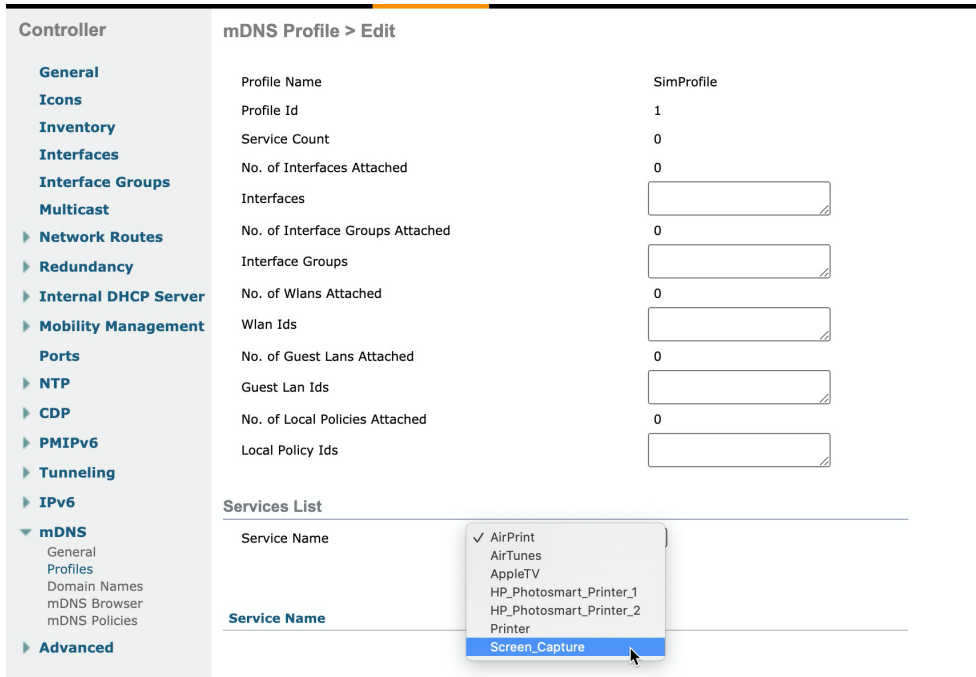
### 1.3 mDNS Profile

Select profile link under mDNS. On the profile panel you can add the custom mDNS services to an existing or create a new mDNS profile.

The screenshot shows the Cisco WLC Controller interface. The top navigation bar includes links for MONITOR, WLANs, CONTROLLER, WIRELESS, SECURITY, MANAGEMENT, COMMANDS, HELP, and FEEDBACK. The left-hand navigation menu is expanded to show the mDNS section, with the 'Profiles' link highlighted in red. The main content area displays the 'mDNS Profiles' configuration page, showing the number of profiles (2) and a table of profiles:

Profile Name	No. Of Services
<a href="#">SimProfile</a>	0 <input type="button" value="v"/>
<a href="#">default-mdns-profile</a>	6

Select the mDNS Profile link to open it. Then select the custom mDNS service from the dropdown menu then click add. Repeat this process until all the services you would like advertised on the network have been added to the mDNS profile.



### 1.4 Associate mDNS Profile with SSID

The final step is to select WLAN ->SSID->Advanced tab and in the mDNS section select the correct mDNS profile to add it to the wireless SSID.

Click save to save the settings.

