

# Cisco Unified Wireless Network Software Release 4.1.191.24M (Mesh Release 2)

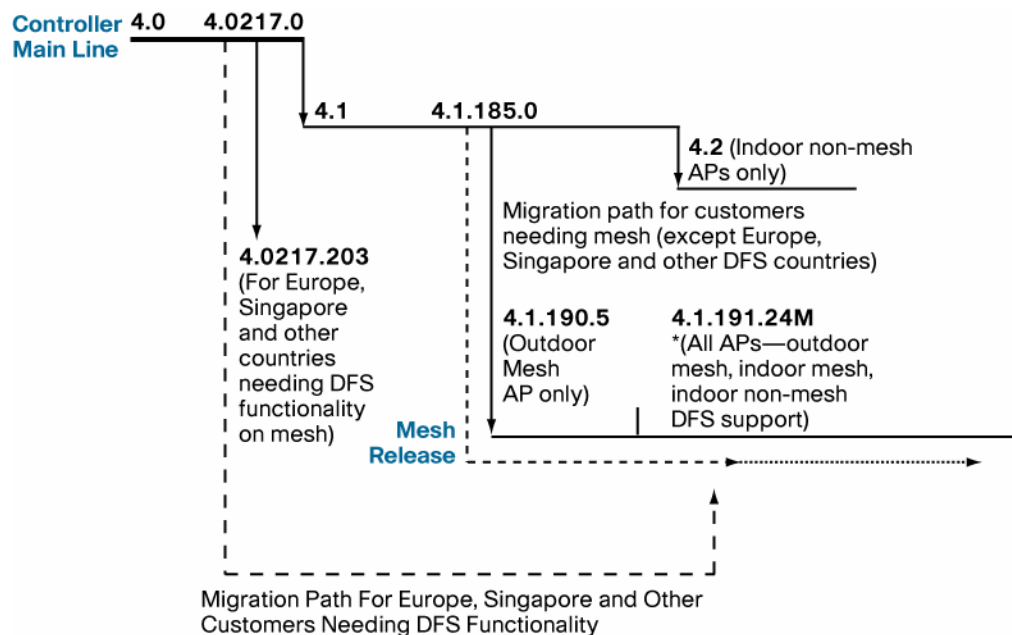
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## Overview

Cisco® Unified Wireless Network Software Release 4.1.191.24M delivers new functionality for customers with wireless mesh networks. It is the second in a series of releases that branch from the Cisco Unified Wireless Network main software release train. Customers with wireless mesh networks requiring the latest mesh functionality must use a release from this separate mesh branch, rather than a release from the main release train. This includes customers who have both mesh access points and standard access points that need to be managed by the same controller. Customers who use only standard access points, and do not use either outdoor mesh access points or indoor mesh access points (enterprise mesh access points), should use the latest release on the main train (for instance, Software Release 4.2).

Figure 1 shows the roadmap for wireless mesh software releases. The mesh release train branches off of the main train Release 4.1.185.0. Wireless networks using Release 4.1.191.24M support the standard access point functionality delivered in Release 4.1.185.0 and wireless mesh functionality delivered in Release 4.1.190.5 and now 4.1.191.24M.

**Figure 1.** Mesh Software Roadmap



\* Except Cisco 1250 Series access points.

In addition to supporting mesh functionality on the Cisco Aironet® 1500 and 1520 Series Mesh Access Points, Cisco Unified Wireless Network Software Release 4.1.191.24M delivers mesh functionality on the Cisco Aironet 1130AG and 1242AG Access Points. It further supports the

indoor access points operating as a standard (non-mesh) access points (see the full list of supported access points, next). As part of the Cisco Unified Wireless Network, Software Release 4.1.191.24M delivers seamless mobility between outdoor and indoor networks.

### Access Points Supported

Cisco Unified Wireless Network Software Release 4.1.191.24M supports the following access points:

Outdoor mesh access points:

- Cisco Aironet 1505 Lightweight Outdoor Mesh Access Point
- Cisco Aironet 1510 Lightweight Outdoor Mesh Access Point
- Cisco Aironet 1522 Lightweight Outdoor Mesh Access Point

Enterprise mesh access points:

- Cisco Aironet 1131AG Access Point
- Cisco Aironet 1242AG Access Point

Standard Cisco lightweight access points:

- Cisco Aironet 1000 Series Access Point
- Cisco Aironet 1100 Series Access Point
- Cisco Aironet 1130 Series Access Point
- Cisco Aironet 1200 Series Access Point
- Cisco Aironet 1230 Series Access Point
- Cisco Aironet 1240 Series Access Point
- Cisco Aironet 1300 Series Access Point

Note that enterprise mesh access points are configured as standard access points by default, and must be reconfigured to operate as mesh access points. If you intend to configure your Cisco Aironet 1130 Series or 1240 Series Access Points as mesh access points, **do not** use Software Release 4.2., because a downgrade from 4.2 to 4.1.191.24M is not supported.

Note that 4.1.191.24M **does not** support the Cisco Aironet 1250 Series Access Point. The 1250 Series is supported by Release 4.2 or later. Customers with mesh access points and the 1250 Series access point will need at least one controller for each release—Release 4.1.191.24M and 4.2. A future release will support mesh access points along with the Cisco Aironet 1250 Series Access Point.

### Controllers Supported

Cisco Unified Wireless Network Software Release 4.1.191.24M is supported on the following controllers:

- Cisco 2106 Wireless LAN Controller
- Cisco 4400 Series Wireless LAN Controller
- Cisco Wireless Services Module (WiSM) (on the Cisco Catalyst® 6500 Series and the Cisco 7600 Series Router)

## Software Images

The following table lists the filename for the images associated with this release.

**Table 1.** Software Images List

Products	4.1.191.24 and Related Software Images		
Access Points		Image	Boot Image
	<b>Mesh Access Points</b>		
	<ul style="list-style-type: none"> <li>• 1130</li> <li>• 1240</li> <li>• 1505</li> <li>• 1510</li> <li>• 1520</li> </ul>	<ul style="list-style-type: none"> <li>• c1130-k9w9-tar.124-3g.JMB</li> <li>• c1124-k9w9-tar.124-3g.JMB</li> <li>• VxWorks</li> <li>• VxWorks</li> <li>• c1520-k9w9-tar.124-3g.JMB</li> </ul>	<ul style="list-style-type: none"> <li>• 1130-boot-m.124-3g.JMB</li> <li>• 1240-boot-m.124-3g.JMB</li> <li>• VxWorks</li> <li>• VxWorks</li> <li>• 1520-boot-m.124-3g.JMB</li> </ul>
	<b>Non-Mesh Access Points</b>		
<ul style="list-style-type: none"> <li>• 1100</li> <li>• 1130</li> <li>• 1200</li> <li>• 1240</li> <li>• 1310</li> </ul>	<ul style="list-style-type: none"> <li>• c1100-k9w8-tar.124-3g.JA2</li> <li>• c1130-k9w8-tar.124-3g.JA2</li> <li>• c1200-k9w8-tar.124-3g.JA2</li> <li>• c1240-k9w8-tar.124-3g.JA2</li> <li>• c1310-k9w8-tar.124-3g.JA2</li> </ul>	<ul style="list-style-type: none"> <li>• C1100-boot-m.123-7.JA5</li> <li>• C1130-boot-m.123-7.JA5</li> <li>• C1200-boot-m.123-7.JA5</li> <li>• C1240-boot-m.123-7.JA5</li> <li>• C1310-boot-m.123-7.JA5</li> </ul>	
<b>WLC-4400</b>	AIR-WLC4400-K9-4-1-191-24M-MESH.aes		
<b>WLC-2100</b>	AIR-WLC2100-K9-4-1-191-24M-MESH.aes		
<b>WiSM</b>	SWISMK9-4-1-191-24M-MESH.aes		
<b>WCS</b>	WCS-STANDARD-K9-4.2.62.11.exe		
<b>WCS Navigator</b>	NAVIGATOR-K9-1.0.91.0.exe		

## New Features

Cisco Unified Wireless Network Software Release 4.1.191.24M provides the following new features. These features are new for Cisco IOS<sup>®</sup> Software mesh platforms (that is, the Cisco Aironet 1520 Series Access Points). These features were already supported—and continue to be supported—in applicable VxWorks mesh platforms (that is, in Cisco Aironet 1505 and 1510 Series Access Points).

### Dynamic Frequency Selection

For operations in certain frequency bands in the 5-GHz spectrum, most countries require that products detect the presence of radar and cease operation in that band upon detection. Release 4.1.191.24M provides support for mesh access points to find an alternative channel upon radar detection. This enables the new Cisco Aironet 1520 Series to be used in countries where all 5-GHz channels require Dynamic Frequency Selection (DFS) support—for instance, in Europe and Singapore. It also expands the allowable channels in Cisco Aironet 1520 Series access points already deployed, such as those sold in the United States and Canada.

### Passive Beaconing

With passive beaconing, a mesh access point that is unable to connect to the network communicates information over the air about its situation. That information can then be captured and relayed by another, in-range mesh access point.

### Enterprise Mesh (Indoor Access Point Platforms)

A wireless mesh network can be created using the Cisco 1131AG and 1242AG Access Point indoor platforms.

### Full Mesh Platform Interoperability (Dual-Band Access Points)

A mesh network can be created between any access point capable of mesh functionality, regardless of whether the access point is an outdoor or indoor mesh access point, or whether the access point is based on Cisco IOS Software or VxWorks. Moreover, any mesh access point can be a parent to any type mesh access point. This applies to the following access points: 1510, 1520, 1131, and 1242. Note that the Cisco Aironet 1505 access point is only interoperable with 1505 access points.

### Support for Cisco Wireless Services Module on the Cisco 7600 Series Router

Customers with Cisco 7600 Series Routers can use the Cisco Wireless Services Module Controller to manage their mesh networks.

Table 2 summarizes the features available for mesh platforms with Release 4.1.191.24M.

**Table 2.** Mesh Features Supported with Software Release 4.1.191.24M

Feature/Platform	Cisco 1505	Cisco 1510	Cisco 1522	Cisco 1130	Cisco 1240
<b>Mesh Network Functionality</b>					
<b>Passive Scanning</b> —Access point searches for an alternative parent on its current backhaul.	X	X	X	X	X
<b>Background Scanning</b> —Access point searches for an alternative parent on any possible backhaul channel.	X	X	–	–	–
<b>Optimal Parent Selection</b> —Access point joins the best available parent.	X	X	X	X	X
<b>Exclusion Listing</b> —Access point avoids selecting as parent those access points that have a pattern of failing.	X	X	X	X	X
<b>Radar-Free Coordinated Sector</b> —Access point notifies parent when radar is detected on the channel so an alternative channel can be employed by the sector.	X	X	X	X	X
<b>Dynamic Frequency Selection</b> —Alternative channel is selected when radar is detected in regulated bands.	–	X	X	X	X
<b>Synchronized Channel Change</b> —Parent advises children of intended channel change.	X	X	X	X	X
<b>Reliable Link Layer, Extended Retries</b> —Transmissions that do not succeed will extend the number of retry attempts in an effort to improve reliability.	X	X	X	X	X
<b>Reliable Link Layer, Secondary Backhaul Radio</b> —A secondary backhaul radio is utilized as a temporary path for traffic that cannot be sent on the primary backhaul due to intermittent interference.	–	X	–	–	–
<b>Passive Beaconing</b> —Log messages from an access point that cannot connect are relayed through other access points to the controller.	X	X	X	X	X
<b>Network Services Functionality</b>					
<b>Ethernet Bridging</b> —Traffic is bridged from hosts connected to a wired port.	X	X	X	X	X
<b>Containment of Bridged Multicast Traffic</b> —Multicast traffic (for example, video camera broadcasts) from a mesh access point (MAP) Ethernet port is contained on a root access point (RAP) Ethernet network and no forwarding occurs (in multicast mode). This helps ensure that: (1) Non-LWAPP multicasts received by the RAP are not transmitted back to the MAP Ethernet networks within the mesh network (their point of origin). (2) MAP-to-MAP multicasts do not occur because they are filtered out.	X	X	–	–	–

Feature/Platform	Cisco 1505	Cisco 1510	Cisco 1522	Cisco 1130	Cisco 1240
<b>Universal Access</b> —Radio used for backhaul traffic provides access for client traffic.	X	X	–	–	–
<b>Support for Workgroup Bridges</b> —Allows multiple wired hosts to connect to the wireless network through a workgroup bridge.	X	X	–	–	–
<b>Multiple Queues for Backhaul Traffic</b> —Extends client traffic prioritization to the backhaul traffic.	X	X	X	X	X
<b>Static Call Admission Control (CAC)</b> —Helps ensure that sufficient bandwidth is available in a mesh sector before serving new T-Spec client call requests.	–	X	–	–	–
<b>Mesh Security</b>					
<b>EAP Authentication</b> —Restricts mesh node access to approved, authenticated access points. Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST) authentication provides secure authentication and encryption key management.	X	X	X	X	X
Applications					
<b>High-Speed Roaming</b> —Roam speeds of up to 70 mph are supported for Cisco Compatible Extensions v4 clients.	–	X	–	–	–
<b>Location</b> —Client location is identified by closest access point.	X	X	–	–	–
<b>Platform Support</b>					
2.4-GHz Band	X	X	X	X	X
4.9-GHz Band	–	X	X	–	–
5.25-GHz Band	–	–	X	X	X
5.47-GHz Band	–	X	X	X	X
5.80-GHz Band	–	X	X	X	X
DOCSIS 2.0 Cable Modem	–	–	X	–	–
Fiber Module	–	–	X	–	–
External Battery Status	X	X	–	–	–
Internal Battery Status	–	–	X	–	–
LED Status Indicator(s)	X (With LED accessory)	X (With LED accessory)	X	X	X



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