Cisco Enterprise Wireless Mesh Q&A

General

Q. What is enterprise wireless mesh?

A. Enterprise Wireless Mesh extends the mesh functionality currently available on the Cisco Aironet AP1500 Series to the AP1130 and AP1240 indoor access point platforms. Enterprise Wireless Mesh functionality provides a convenient, flexible, and scalable way of extending the corporate data network to reach indoor areas of your business that are difficult to cable. Wireless mesh networks use RF to provide both network access and data backhaul, making it possible to extend the data network to the far reaches of your facilities without requiring cabling. Wireless links are dynamically established between access points, creating a self-forming and self-healing wireless mesh network that provides data connectivity in even the hardest to reach areas of your business. Business applications for mesh networks exist in a wide variety of settings and industries, including corporate campuses, industrial and manufacturing environments, hotels, healthcare facilities, retail stores, and logistics warehouses.

Q. What are the common applications for enterprise wireless mesh?

A. Common applications for enterprise wireless mesh include:

- Extending data connectivity to areas of your facilities that are difficult to cable, such as loading docks, manufacturing floors, and warehouses.
- Extending data connectivity between buildings, such as portable classrooms, parking attendants, and guard shacks.
- Deploying a temporary wireless network, such as for a special event, mobile command center, construction site, or disaster recovery site.
- Installing wireless networks where running cabling is impractical, such as historic buildings and hazardous areas.
- Deploying wireless networks where cabling interferes with the aesthetics of the environment, such as shopping malls, hotels, and art galleries.

Q. How does enterprise wireless mesh fit in with outdoor mesh?

A. Functionally, there is no difference between the 1500 series Outdoor Mesh AP and the Enterprise Wireless Mesh functionality in the 1130 and 1240. Enterprise Wireless Mesh software extends the mesh functionality currently available on the Cisco Aironet AP1500 Series to the AP1130 and AP1240 indoor access point platforms. The main difference is the 1500 Series leverage a unique hardware platform that makes it uniquely suited to the handle demands of outdoor networks and the creation of wireless broadband networks. The AP1130, AP1240, and AP1500 are all part of the Cisco Unified Wireless Network architecture, which provides a seamless indoor / outdoor solution for customers.

Deployment

Q. **Which indoor access points support enterprise wireless mesh?**

A. Enterprise Wireless Mesh functionality is supported on the following indoor access points: Cisco Aironet AP1131AG and Cisco Aironet AP1242AG. It is not available on the 2.4 GHz single band platforms at this time.

Q. **Is there a cost associated with enabling enterprise wireless mesh on the supported indoor access points?**

A. A software license is required to enable the enterprise wireless mesh feature. All indoor access points participating in the enterprise wireless mesh require a license - this includes both the root APs as well as the mesh APs. Current NTE price for the enterprise wireless mesh functionality is US$500 per access point.

Q. **How will the software license work?**

A. An enterprise wireless mesh license must be purchased for each access point participating in the wireless mesh network. This includes both the root APs as well as the mesh APs. This license provides the right to place an AP into wireless mesh mode. On initial release, the enterprise wireless mesh feature license will not be enforced, but in the future it will be enforced on the controller.

Q. **Are my existing AP1131AG and AP1242AG access points capable of supporting enterprise wireless mesh, or do I need to purchase new access points?**

A. Your existing AP1131AG and AP1242AG access points are capable of supporting enterprise wireless mesh. Once you purchase the wireless mesh software license, you will have the right to enable mesh functionality on those APs.

Q. **Will Cisco Aironet AP1250, the industry-leading enterprise 802.11n platform, support enterprise wireless mesh?**

A. Enterprise Wireless Mesh will not initially be supported on the AP1250. Cisco is committed to leveraging the two complimentary technologies of 802.11n and wireless mesh as the increased backhaul capacity offered by 802.11n significantly enhances the performance of the mesh network. Support for this capability is planned in a future software release. For further information, please contact your Cisco representative.

Q. **Are there any country specific regulatory restrictions on where enterprise wireless mesh can be deployed? Which AP regulatory domains are supported?**

A. The enterprise wireless mesh functionality uses the 5 GHz radio for backhaul and is therefore only available on the dual-band (2.4 / 5 GHz) access point platforms. All dual-band regulatory domains are supported. Note that 5-GHz operation is not available in all countries and therefore, neither is the enterprise wireless mesh feature. Refer to the Wireless LAN Compliance status document for information on countries in which the dual-band access points are approved for operation. Enterprise Wireless Mesh is not available on the 2.4 GHz single band platforms at this time.

Q. **Which controllers will support enterprise wireless mesh?**

A. Enterprise Wireless Mesh is supported on the following controller platforms: Cisco 4400 Series Wireless LAN controllers, Cisco 2100 Series Wireless LAN controllers, and the Cisco Catalyst 6500 Series Wireless Services Module (WiSM).

Q. **How is enterprise wireless mesh managed?**

A. Enterprise Wireless Mesh is an integral part of the Unified Wireless Network. As with all components of the Unified Wireless Network, mesh APs obtain configuration, security policies, and RF parameters from Cisco wireless LAN controllers. Wireless LAN controllers are in turn managed by the Cisco Wireless Control System (WCS). Cisco WCS provides an easy-to-use, intuitive graphical user interface (GUI) that displays key network statistics, including traffic statistics, link characteristics, and client information.

Q. **Which software release supports enterprise wireless mesh?**

A. The enterprise wireless mesh feature will be introduced in mesh release 2.0. Mesh release 2.0 is based on 4.1 MR1. Note that enterprise wireless mesh will not be supported on the mainline release train until the mesh train merges back into the mainline 12+ months in the future.

Q. **Does the mesh release train support future mainline release features?**

A. The mesh release train is targeted for the acceleration of mesh technology and enhancements to the mesh features. For a limited time, development on the mesh release train will occur in parallel to the mainline release train; new mainline features will not be available on the mesh release train. Once the mesh enhancements are complete, the mesh release train will merge back into the mainline, providing both advanced wireless mesh technology and the various innovations introduced in the mainline.

Q. **Will clients experience service interruption roaming between indoor and outdoor environments?**

A. The advanced mesh technology is applicable to the outdoor as well as the indoor access points. This ensures seamless mobility across indoor and outdoor environments and the users experience no service interruption as they roam freely from indoor to outdoor environments.

Mesh Technical Questions

Q. **How does mesh networking work?**

A. At the heart of Cisco mesh networks is a patent pending protocol called Adaptive Wireless Path Protocol (AWPP). The intelligent wireless routing of AWPP allows the access points to discover each other automatically and select the best path for maximizing system capacity and minimizing latency. Access points continuously communicate with other nodes, evaluating the potential of each link to improve performance. If a link is degraded, the access point will determine whether a better path exists, and will route traffic through a more optimal node. A mesh network eliminates the need to wire every access point in the network, making it easier and more efficient to extend the reach of the network.

Q. **Can the root APs also provide wireless connectivity to clients?**

A. Yes, root APs can also provide wireless connectivity for clients.

Q. **What happens when an existing route is no longer available due to the failure of a mesh AP?**

A. Through Cisco AWPP, each mesh AP maintains a list of neighbor AP information including SNR, ease value and bridge-group name. If a mesh AP loses connectivity with its parent, it will use the neighbor information to determine the best parent AP to connect with.

Q. **What happens when a root AP loses Ethernet connectivity?**

A. The RAP maintains a list of neighbor AP information including SNR, ease value and bridge-group name. If Ethernet connectivity is lost, the root AP becomes a mesh AP and uses this information to select the best parent AP to connect with.

Q. **What is the recommended number of hops for an enterprise wireless mesh deployment?**

A. Depending on the application and coverage density, the recommended number of hops should not be more than 4. For optimized performance, 2 or fewer hops are recommended.

Q. **Is Hybrid Remote Edge Access Point supported with enterprise wireless mesh?**

A. No.

Q. **Is voice supported for enterprise wireless mesh?**

A. The Aironet access points are WMM capable and QoS is supported on the local 2.4 GHz access and for the 5 GHz backhaul. Although Call Admission Control (CAC) is supported between the clients and the AP, full voice support requires CAC on the backhaul link to ensure end to end voice quality. Therefore, voice over enterprise wireless mesh is not currently supported. However, testing has shown that it takes several voice calls to saturate the mesh network.

Q. **Does location work effectively over enterprise wireless mesh?**

A. While location functionality on an indoor AP with a wireless backhaul link should work no differently from an indoor AP with a wired backhaul link, it has not been fully tested and is not yet fully supported. Support for this capability is planned in a future software release. For further information, please contact your Cisco representative.

Q. **What security features are available with enterprise wireless mesh?**

A. All of the security features available with the Cisco Unified Wireless Network are available when using the enterprise wireless mesh feature, including 802.11i / WPA2, 802.1X authentication, and hardware-based AES encryption. Security is also provided over the wireless backhaul links using the X.509 digital certificates to authenticate the access point to the wireless mesh and using hardware-based AES encryption for data privacy.