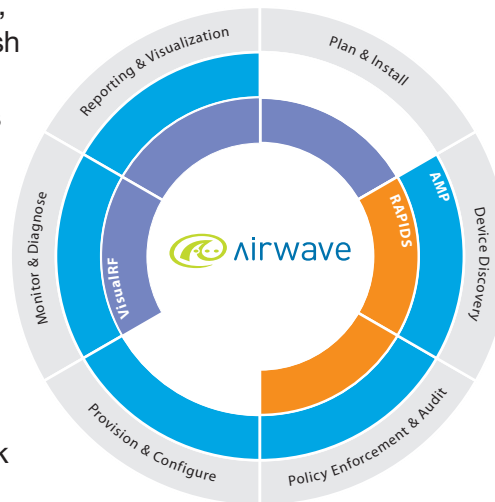# AirWave® Wireless Management Suite 6.0 Solution Guide

New wireless technologies, including 802.11n and mesh architectures, now make it possible to deliver wireless access everywhere – indoors and outdoors, in large warehouses and small remote offices. As the new "all-wireless enterprise" becomes a reality, the IT support burden increases for everyone, from the network engineers responsible for managing the infrastructure to the Help Desk staff who answer the phone when users cannot connect.

Network Operations departments struggling to keep pace with a rapidly growing mobile user population too often try to limp along with tools designed for the static wired networks of the 1990s or with proprietary wireless element management systems designed by hardware vendors to help network engineers to configure their access points and controllers. The result: poor network performance and rapidly increasing support costs.

Mobile users break the old port-based network management model. Network Operations can no longer simply manage Ethernet ports on the LAN. They need complete and instantaneous visibility to every user and device: Who is connected? Where are they located? Are they properly authenticated? What's happening in the RF environment? How much bandwidth is available and how much is being used?

Supporting a growing wireless network and an increasingly mobile user population without adding substantial IT headcount requires a new approach to network management – with intelligent, user-centric management tools designed specifically for a mobile world.

AirWave 6.0 — What's New?

The new AirWave Wireless Management Suite 6 software release significantly enhances the award-winning AirWave software, providing critical new features for the larger and faster wireless networks of tomorrow:

- **802.11n Management:** Supports 802.11n products from leading hardware providers, so you can manage your next-generation infrastructure from the same console as your existing WLAN.

- **Dedicated Help Desk Views and Incident Management:** Provides the Level One and Level Two Help Desk with automated diagnostics and the specific information needed to quickly resolve end-user issues without escalation. Integrates with leading service desk solutions .

- **Visibility across both the Wired and Wireless Infrastructure:** Enhanced monitoring of not just controllers and access points, but routers, switches, authentication servers, and management servers to facilitate comprehensive network analysis and more accurate diagnostics

- **Intelligent Capacity Planning:** Full set of reports and monitoring views to help determine where the wireless network is approaching capacity so you can manage expansion intelligently and cost-effectively.

- **Enhanced AirWave Master Console:** Provides centralized control and visibility for wireless networks with tens of thousands of wireless devices, whether on a single campus or distributed across the globe.

IT needs true Operations Management Solutions that deliver a full range of capabilities, from real-time user and device monitoring to compliance management . These management solutions must be designed for the entire IT staff, providing every team member with the specialized monitoring views and the detailed information needed for his or her job. Most important, they must provide complete visibility and transparency, so IT can see exactly where users are and how the network is performing at all times.
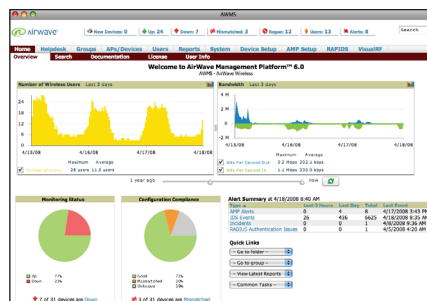
The AirWave Wireless Management Suite software meets this need, giving you a single console from which to monitor, configure and control your entire wireless network – whether you have 50 WiFi access points from a single vendor or fifty thousand WiFi, mesh, and WiMax devices from a variety of different providers. The AirWave software enables intelligent lifecycle management for your wireless infrastructure, helping you extend the useful life of your legacy infrastructure even as you migrate to 802.11n and other critical new technologies. That's why leading Fortune 500 corporations, service providers, universities, school districts, healthcare organizations, and retailers across the world use AirWave's software to manage and control their Aruba, Avaya, Cisco, Enterasys, Foundry, Meru, Motorola/Symbol, ProCurve, Proxim, LANCOM, Trapeze, Tropos and other WLAN infrastructure devices. The award-winning AirWave software reduces the cost of operating your wireless network, improves network performance and reliability for your end users, and makes your network more secure through centralized visibility and control. With AirWave, you get:

- **Manageability and reduced operating costs through the automation of routine tasks**

- **Visibility to every user and device, spanning both your wireless and wired infrastructure**

- **Security through automated enforcement of key policies network-wide**

- **Supportability by equipping the Help Desk to efficiently handle most end-user issues**

- **Flexibility to manage multiple product generations and vendors from a single console.**
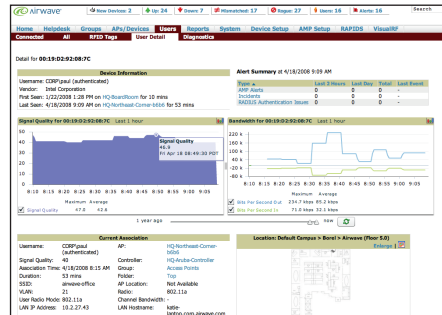
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AirWave Management Platform (AMP)

The AMP software is core of the AirWave Wireless Management Suite, providing efficient centralized management of your wireless infrastructure. The AMP application installs on standard PC server hardware (or on an optional hardware appliance) in your network operations center. The AMP software communicates with and controls your wireless infrastructure via standard protocols (SNMP, HTTP, etc.) across a LAN or WAN. Multiple IT staff members can access AMP's easy-to-use web-based interface simultaneously, each with a unique login and administrative privileges tailored to their specific job responsibilities.
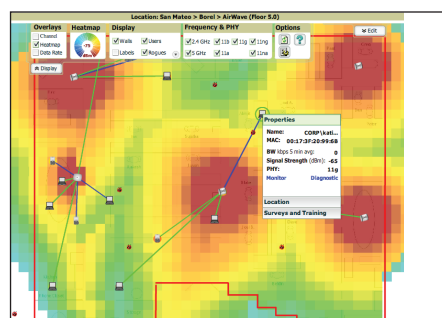
Key features of the AMP software include:

• **Real-time monitoring of every wireless user and device** connected to your network, with rapid drill-down from network-wide to device-level monitoring views.

• **Centralized discovery and configuration management** of controllers and wireless access points to ensure that your policies are applied uniformly across the entire network.

• **Archived device configurations** for intelligent management, auditing and version control.

• **Efficient remote software distribution** to eliminate time-consuming and error-prone manual software updates.

• **Automated compliance audits** that verify the actual configuration of your APs and controllers against your

policies and automatically 'repair' misconfigured devices.

• **Multi-architecture support** for autonomous ("thick"), lightweight ("thin"), and mesh access points as well as point-to-point and WiMax devices.

• **Intelligent lifecycle management** through AirWave's unparalleled ability to support both legacy and state of the art infrastructure simultaneously.

• **Multi-vendor support** for wireless infrastructure from Aruba, Avaya, Cisco, Enterasys, Foundry, Meru, Motorola/ Symbol, ProCurve, Proxim, Trapeze, Tropos and others.

• **Historical trend reporting** with up to two years of data. All reports are exportable and customizable, and can be distributed automatically via email.

• **Alerts and diagnostics** that tell you when potential problems are detected. Alerts can be sent via email or via SNMP traps to another fault management system.

Visual RF Location and Mapping Software

To understand what is happening on your wireless network, you need to know where your users and devices are located – and to actively monitor the RF environment in those areas. The AirWave Wireless Management Suite's VisualRF application puts this information at your fingertips, displaying fully integrated maps and location information. VisualRF uses sophisticated RF fingerprinting algorithms to accurately display coverage patterns and calculate the location of

every wireless device in range. Best of all, VisualRF does not require dedicated RF sensors or a costly additional location appliance.

Key features of the VisualRF software include:

- **Accurate location calculation** for each wireless user and device, using RF data from your existing APs and controllers. Location accuracy increases with higher density, providing more data points to 'triangulate' the location of each device.

- **Integrated 'QuickView' maps** present location information wherever you need it, allowing you to zoom quickly from a building view to an individual user's location.

- **Google Earth integration** for depiction of outdoor coverage and device location.

- **RF heatmaps and channel maps** generated on a near real-time basis.

- **Direct CAD and bulk floor plan import**, saving hundreds or thousands of man-hours for organizations with large networks and hundreds of locations.

- **Visual display of alerts and error conditions** customizable on a per-user basis (i.e., an AP icon will display in red when a critical alert is active or when usage conditions exceed pre-defined thresholds).

- **Enhanced location accuracy** through the continuous recalculation of RF attenuation grid and device locations based on real-time data from your wireless LAN.

- **Flexible XML Location API** for integration with other location-based services.

- **RFID tag tracking** for enhanced asset management.

- **Flash-based interface** for improved responsiveness and support across leading browsers.

RAPIDS Rogue AP Detection Software

Unauthorized 'rogue' access points are one of the most widespread and serious wireless security threats in the enterprise. With RAPIDS, you can use your existing access points as sensors to 'listen' for unknown APs in range. Unfortunately, wireless techniques alone often cannot detect all rogues unless you have wall-to-wall coverage in every facility worldwide. The RAPIDS module uses a unique combination of discovery techniques across both your wireless and wired network infrastructure to find rogues no matter where they are located.

Key features of the RAPIDS software include:

- **Wireless rogue scanning** using your existing access points (thick or thin) to detect and locate rogue devices within range.

- **Wireline rogue discovery** by polling your routers and switches. Discovered devices are compared to RAPIDS' database of 9,000+ ranges to determine which are of them are most likely to be rogue access points.

- **Enhanced correlation of wired and wireless scans** to provide you all known information about a potential rogue in a single message.

- **Display of rogue location** on the VisualRF site map to help you quickly locate and remove unauthorized devices.

- **Enhanced and expanded rogue scoring system** that assigns a score to each potential rogue device based on multiple factors, eliminating false positive results and helping you focus your time on the most significant threats.

- **Automated high-priority alerts** contain all known information about the rogue, including SSID, security settings, switch port, etc.

- **Ignores "known" and neighbor APs** so you can spend your time combating real rogues.

- **Option to view or ignore ad-hoc devices** depending on your particular threat environment.

AirWave Master Console

As wireless networks expand to encompass tens of thousands of wireless access points and controllers, your need for real-time information and centralized control increases. Large organizations need a management architecture that scales without sacrificing visibility and control – which often means distributing the AirWave Wireless Management Suite software on multiple servers for optimal performance. These servers may be collocated or distributed in NOCs around the world, depending on the network architecture.

While the AWMS software may be distributed, the AirWave Master Console provides IT with one console for managing and monitoring the entire wireless infrastructure.

The AirWave Master Console communicates with each server running the AirWave software, aggregating and presenting critical information to provide a single view across the network. Key features of the AirWave Master Console software include:

- **Centralized network-wide reporting**: Any report that can be generated via an individual instance of AirWave Wireless Management Suite 6 software can be generated network-wide from the AirWave Master Console.

- **Scalable centralized configuration**: With increasingly strict requirements for network security, even the most distributed global enterprises must centralize control over configuration policies and security settings. The AirWave Wireless Management Suite

- **Logs IDS traps and alerts** from leading infrastructure providers.

- **AirWave Management Client** optional client software that allows RAPIDS to integrate RF data from wireless enabled PCs for rogue detection even where no wireless coverage is provided.

6 adds configuration management capabilities to the AirWave Master Console, allowing you to define 'model' group policies that are then pushed out system-wide.

- **Executive Level Reporting**: Generates high-level executive reports depicting the performance of the entire network as well as more detailed reports for groups, locations, or even individual devices.

- **Efficient scheduling for local time zones:** Schedules configuration changes and software updates in local time, rather than simultaneously on a system-wide basis.

- **Many-to-one failover**: Provides cost-effective high-availability management when the AirWave software is distributed on multiple servers.
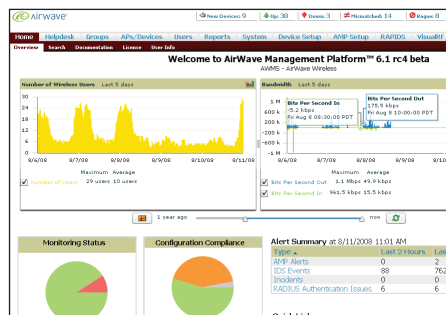
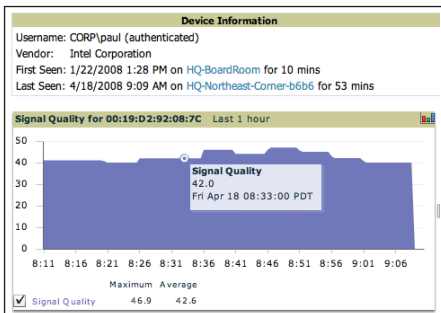*∧irwave*®

AirWave Benefit — Visibility

You can't manage what you can't see. The key to driving down operational costs and improving network performance is to make sure your IT staff sees everything they need to diagnose and resolve problems. The AirWave Wireless Management Suite's most important function is to put all the information you need at your fingertips – and to help you quickly locate any user or device anywhere on your network.

USER & DEVICE MONITORING

With AirWave, you can find any user or device on your wireless network with the click of a button – and generate real-time monitoring views that show you exactly what is happening and how the network is performing. Navigate to an AP's monitoring page and you see exactly how many users are connected to the access point, who those users are, how much bandwidth they are using – and you can even compare current usage patterns to historical trends from the last day, week, month, and year. Drill deeper and you can examine RF statistics, error rates and QoS data (voice traffic vs. data) to better understand the RF environment and remotely diagnose problems. Your Level One and Level Two Help Desk colleagues can monitor individual users, verifying their RF signal strength, bandwidth utilization, and up to two years of roaming history.

HISTORICAL TREND REPORTING

To assess performance and network capacity, it is not enough to look at real-time network data in isolation. You also need trend data dating back months or years to determine how current conditions compare to previous levels and how changing usage patterns may impact network performance. Proprietary management solutions may provide only a few weeks of data; the AirWave Wireless Management Suite 6 gives you nearly two years of historical data and user roaming patterns – as well as the detailed capacity reports you need to plan for network expansion or 802.11n upgrades.

LOCATION INFORMATION

Sometimes, to accurately diagnose and resolve a wireless problem, you need to see what's really going on in the RF environment: Are too many users connected to an AP? Is the user in a dead spot? Is there interference from a neighboring AP? The new AirWave Wireless Management Suite 6 puts all this information at your Help Desk's fingertips – without the costs of specialized sensors or location appliances.

AirWave Benefit — Flexibility

The "all-wireless enterprise" will not be implemented overnight using a single wireless technology – or even a single generation of products. Instead, wireless access will gradually penetrate all locations over a number of years, and in most cases will require use of multiple wireless technologies to provide cost-effective coverage.

Few organizations have the budget or need to implement wall-to-wall wireless
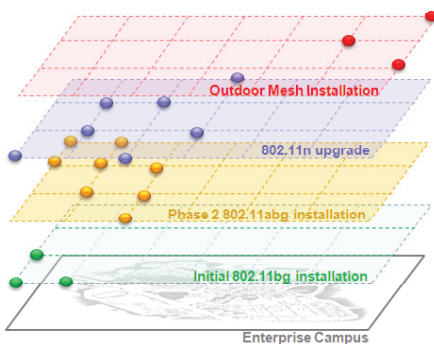
in all locations simultaneously. Instead, they deploy first in the locations where the benefits of mobility and the wireless ROI are the most clearcut. Additional coverage is then added according to user demand and business need.

In large organizations, this organic process may take many years – spanning multiple generations of wireless technology, from thick APs to thin, from 802.11bg to 802.11a and finally to 802.11n. The wireless infrastructure used in the initial phases of the rollout may no longer even be supported or sold by the hardware vendor by the time the project is complete.

An IT organization must have the flexibility take advantage of the best new technologies as they are introduced, but cannot afford to 'rip and replace' existing infrastructure with every new innovation. Similarly, in a rapidly changing market, IT cannot risk tying itself exclusively to any single hardware vendor or product line. Yet, neither can IT afford the time and expense of training all staff members to

use separate management consoles for each vendor and for each generation of technology. Instead, organizations need a **multi-layered management strategy** that enables them to control complex, heterogeneous networks across their entire lifecycle – driving down support costs while extending the useful life of the network infrastructure. Unlike proprietary element management systems, the AirWave Wireless Management Suite delivers support for:

- Multiple wireless architectures, including 'thin' APs and controllers, autonomous APs, mesh networks, point-to-point bridges, and even WiMax

- Leading wireless infrastructure vendors, including Aruba, Avaya, Cisco, Enterasys, Foundry, Meru, Motorola/Symbol, ProCurve, Proxim, Trapeze, Tropos and others.

- Multiple generations of technology, dating back to the earliest days of the WiFi industry as well as the most current new products.

AirWave Benefit — Security

If your wireless network is not centrally managed, it cannot be secure. Network management is the "missing piece" in many organizations' wireless security strategy – without it, you cannot truly know that your security policies are being implemented and enforced. With today's stricter regulatory compliance standards (Sarbanes-Oxley, HIPAA, PCI, and others), strong centralized wireless network management becomes absolutely essential to protecting your organization and its data.

USER TRACKING & SESSION HISTORY

In a secure network, you need to know exactly who is connected to your network, where they are located, and how they are authenticated. The AirWave Wireless Management Suite 6 gives you precisely this level of visibility – and even allows you to see a user's full roaming history so you can see exactly when they have connected to your network and where they've roamed.

COMPLIANCE AUDITS & CONFIGURATION POLICY ENFORCEMENT

Good security requires that you regularly audit all your controllers and access points to ensure that their configurations match your policies. Yet, in a large network with thousands of APs and controllers, manual configuration audits are too time-consuming and error-prone. Often, they simply do not get done. Gartner Group has estimated that as many as 90% of wireless security incidents will result from this type of improper configuration. AirWave addresses this vulnerability by automatically auditing your entire wireless infrastructure, alerting you whenever a configuration error is detected and delivering a complete report showing exactly how the configuration violates your policy.

ROGUE DETECTION

Rogue access points are perhaps the next most common security threat. AirWave's RAPIDS software module is designed to detect unauthorized access points no matter where they are on your network – even if they are in a remote office without Wi-Fi hundreds of miles from your office (See the more in-depth discussion of AirWave's RAPIDS module above).

ROLE-BASED ADMINISTRATIVE ACCESS & FULL AUDIT LOGS

Good security policy dictates that only those with a 'need to know' have access to your management system and to critical information about your network. Yet, in a large IT organization, literally dozens of individuals – ranging from Help Desk support staff to your most senior network administrators – may need access to your management system to do their jobs. AMP's role-based administrative access allows you to assign different privileges (read-only, read-write, audit-only) to each individual and to restrict their access to certain segments of the network. All actions are logged so you can tell exactly who made any change or took a specific action.

AirWave Benefit — Manageability

As your wireless network gets larger and more complex, you will likely find that mundane tasks – like pushing a new vendor software release to all your access points or controllers – are consuming an unacceptable amount of your time. The AirWave Wireless Management Suite is specifically designed to automate these types of routine tasks and free you up to pursue other, higher-priority activities.

AUTOMATED CONFIGURATION MANAGEMENT

The AirWave Management Platform makes it easy to define your configuration policies using AMP's web-based interface or by pulling a 'known good' configuration from an existing device to create a template to be applied to other devices. You can then efficiently push the appropriate configuration to a single device, a specified group of devices, or to every device on your network. The AirWave Wireless Management Suite 6 includes a 'global'templating function that allows you to quickly and easily update general configurations across the entire network without overwriting certain settings that may vary from location to location on your network.

FIRMWARE DISTRIBUTION

Most hardware vendors issue updated software for their devices several times a year, often containing important security patches and bug fixes. Yet, few organizations today keep up with these updates, simply because the process of distributing the software across a large wireless network is so cumbersome. With AMP, when you need to update the firmware on your WLAN devices, you simply define a 'minimum acceptable' firmware version for each make and model of device. AMP automatically distributes the new software to any devices with down-rev versions of software. Whenever configuration changes or firmware updates are implemented, AMP automatically verifies that the change was applied successfully to every device.

INTELLIGENT SCHEDULING

Configuration changes and firmware updates can often disrupt user sessions and may sometimes require a significant amount of network overhead. To minimize disruption to your critical business processes, AMP allows you to schedule these actions to occur during a specified maintenance window, often late at night when network usage is low – and to ensure that the changes occur within the approriate window in local time. With the 6.0 software release, you can schedule recurring tasks to occur daily, weekly, monthly, or at a custom-defined interval.

AirWave Benefit — Supportability

Proprietary element management solutions are notorious for becoming 'shelfware' – too difficult to use for any but the most skilled and most highly trained IT staff. When a solution is designed exclusively for high-level network engineers, every support issue must be escalated to those engineers, becoming major operational bottlenecks. With thousands of new wireless users and whole new categories of wireless devices like VOIP phones, printers, handhelds, and RFID tags connecting to the WLAN, the ability of the Level One and Level Two Help Desk to support end users efficiently is key to driving down the cost of owning and operating a wireless network. The AirWave Wireless Management Suite 6 provides the high-end functions needed by network engineers, but contains unique features specifically designed to make the job of the Help Desk easier and more efficient.

SPECIALIZED HELP DESK VIEWS AND DIAGNOSTICS

The AirWave Wireless Management Suite 6 introduces a new Help Desk monitoring view that aggregates the critical information needed to quickly assess performance and diagnose problems. Special diagnostic summaries highlight anomalies and situations that may affect end user network performance. The Help Desk can rapidly drill down from these summary views to detailed monitoring screens and integrated maps showing where users are located and how specific devices are performing – and can access real-time performance data for those devices.

MONITORING KEY COMPONENTS OF THE WIRED INFRASTRUCTURE

True root cause analysis of wireless problems requires that the Help Desk have visibility to components of the wired network infrastructure that affect WLAN performance, including routers, switches, authentication servers, network management systems and more. The AirWave 6` software provides enhanced monitoring of these devices, giving the Help Desk better insight into the overall network and allowing them to determine exactly where errors may be occurring.

AUTHENTICATION ERROR LOGS

Many of the wireless problems reported to the Help Desk are the direct result of a failure in the user authentication process. AirWave 6 logs and displays RADIUS authentication errors.

INCIDENT TRACKING & DATA CAPTURE

The AirWave Wireless Management Suite 6 permits the Help Desk to log incidents for reporting and root-cause analysis. When logging or escalating incidents, the Help Desk can attach snapshots of relevant monitoring screens and performance data to log exactly what was happening at the time a problem was reported. The AirWave Wireless Management Suite 6 even integrates with other tools (such as BMC Remedy) that the Help Desk uses to track, report, and escalate user issues.

AirWave Benefit — Real Savings

In the end, the true measure of any management solution is its ability to reduce the cost of operating your network. The AirWave Wireless Management Suite software is designed specifically to drive support costs out of your network:

Total Cost of Ownership
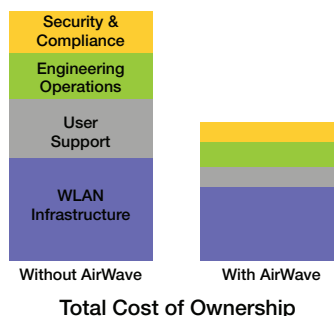
REDUCED SECURITY AND COMPLIANCE COSTS

• Reduced user support costs though faster Help Desk problem resolution and a reduction in the number of wireless support calls.

• Reduced compliance management costs through automated enforcement, auditing, and logging.

GREATER EFFICIENCY IN NETWORK ENGINEERING

• Time savings through automation of routine tasks like configuration changes, firmware updates, rogue AP scans and more.

• Remote diagnostics and corrective action to reduce troubleshooting time.

LOWER USER SUPPORT COSTS

• Reduced user support costs though faster Help Desk problem resolution and a reduction in the number of wireless support calls.

• Replacement of multiple proprietary management consoles and location servers with a single management console with integrated location capabilities.

REDUCED INFRASTRUCTURE COSTS

• Savings through intelligent lifecycle management that extends the useful life of existing WLAN infrastructure and deferring upgrades until they are truly required.

• Intelligent reports and capacity planning to help you determine exactly where you need to expand network capacity so you can invest your infrastructure budget wisely.

A Complete Solution for Any Wireless Network

AirWave Wireless Management Suite (AWMS) software is available in multiple versions depending on network size, as indicated in the Software Part Number column below. Failover servers are also available for use in mission-critical environments. For added convenience and reliability, appliance versions of the AirWave solution are available – these are indicated in the Hardware Part Number column. Customer-provided hardware platforms may also be used.

Number of Devices Supported	Software Part Number	Hardware Part Number
2,500	AWMS-Enterprise	AWMS-HW-ENT
1,000	AWMS-Professional	AWMS-HW-PRO
500	AWMS-500	AWMS-HW-PRO
200	AWMS-200	AWMS-HW-PRO
100	AWMS-100	AWMS-HW-PRO
50	AWMS-50	AWMS-HW-PRO
25	AWMS-25	AWMS-HW-PRO
Up to 30 AMP Servers	AWMS-MASTER	AWMS-HW-PRO
Up to 50 AMP Servers	AWMS-MASTER	AWMS-HW-ENT

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WWW.AIRWAVE.COM

1700 S. El Camino Real, Suite 500. San Mateo, CA 94402 | Tel. +1 650.286.6100 | Fax. +1 650.286.6101