Overview

This document is designed as a reference for installing Dell Networking W-AirWave 8.2.4 using the CentOS software bundled with the ISO disc image.

NOTE	Dell Networking W-Series AirWave Wireless Management Suite (AWMS), and AirWave Management Platform refer to the same product set and are used interchangeably.

NOTE	AirWave does not support downgrading to older versions. Significant data could be lost or compromised in such a downgrade. In unusual circumstances requiring that you return to an earlier version of AirWave, we recommend you perform a fresh installation of the earlier AirWave version, and then restore data from a pre-upgrade backup.

Pre-Installation Checklist

Use this check list to ensure installation goes smoothly.

Table 1: *Pre-Installation Checklist*

Task	Completed
Have available the AirWave license key sent to you in an email from Dell.	
Obtain dedicated server(s) meeting Dell sizing specifications.	
Determine the static IP address for each AirWave server.	
Firewall provisioning enabling proper ports/protocols.	
Determine WLAN infrastructure properties (type, quantity, and location).	
Determine WLAN infrastructure access credentials (SNMP, telnet, SSH, etc.).	
Determine WLAN security policy specifications.	
Set router and switches to monitoring (optional).	
Configure upstream NMS applications (optional).	
Determine wireless client authentication servers (optional).	
Determine AirWave administrative authentication servers like TACACS+, LDAP, or RADIUS (optional).	
If your software is more than two versions old, contact technical support to help you upgrade the software.	

Minimum Supported Browsers

Windows®

- Windows®

- Microsoft Internet Explorer® 11
- Mozilla Firefox® 47.0
- Google Chrome™ Version 50.0.2661.102 (64-bit)

Mac OS X® (10.11)

- Apple Safari® 5.x
- Mozilla Firefox® 47.0
- Google Chrome™ Version 50.0.2661.102 (64-bit)

Hardware Requirements and Installation Media

The AirWave installation DVD includes all software (including the CentOS) required to complete the installation of AirWave. AirWave supports any hardware that is Red Hat Enterprise Linux 6.2 certified. By default, all installs are based on a 64-bit operating system.

AirWave hardware requirements vary by version. As additional features are added to AirWave, increased hardware resources become necessary. For the most recent hardware requirements, refer to the *Dell Networking W-AirWave 8.2.4 Server Sizing Guide*.

Installing Linux CentOS 6.6 (Phase 1)

Perform the following steps to install the Linux CentOS 6.6 operating system. The Linux installation is a prerequisite to installing AirWave on the network management system.

> **CAUTION**
>
> This procedure erases the hard drive(s) on the server.

1. Insert the AirWave installation DVD into the drive and boot the server.
2. Type `install` and press **Enter**.

   To configure the partitions manually, type `manual` and press **Enter**.

Figure 1: *AirWave Installation*

3. Allow the installation process to continue. Installing the CentOS software (Phase I) takes 10 to 20 minutes to complete. This process formats the hard drive and launches Anaconda to install all necessary packages. Anaconda gauges the progress of the installation.

Upon completion, the system will prompt you to eject the installation DVD and reboot the system. The GRUB screen will appear upon reboot.

4. Remove the DVD from the drive and store it in a safe location.

Installing the AirWave Software (Phase 2)

Getting Started

Perform the following steps when the GRUB screen appears.

1. Press **Enter** or wait six seconds. The system automatically loads the kernel.

2. When the kernel is loaded, log into the server using the following credentials:
   - login = **root**
   - password = **admin**

3. Start the AirWave software installation script by executing the **./amp-install** command.

   Type `./amp-install` at the command prompt and press **Enter** to execute the script.

Step 1: Configuring Date and Time

The following message appears. This step ensures the proper date and time are set on the server.

```
----------------------- Date and Time Configuration ------------------
Current Time: Mon May 8 16:10:07 EDT 2017
1)   Change Date and Time
2)   Change Time Zone
0)   Finish
```

Ensure that you enter the accurate date and time during this process. Errors will arise later in the installation if the specified date varies significantly from the actual date, especially if the specified date is in the future and it is fixed later. As a best practice, configure NTPD to gradually adjust your clock to the correct time.

1. Select **1** to set the date and select **2** to set the time zone. Press **Enter** after each configuration to return to the message menu above.

> **CAUTION**
>
> Changing these settings after the installation can cause data loss, especially for time-series data such as Client and Usage graphs. Avoid delayed configuration.

2. Press **0** to complete the configuration of date and time information and to continue to the next step.

Step 2: Checking for Prior Installations

The following message appears after the date and time are set:

```
Welcome to AMP Installer Phase 2
STEP 2:  Checking for previous AMP installations
```

If a previous version of AirWave software is not discovered, the installation program automatically proceeds to Step 3. However, if a previous version of the software is discovered, the following message appears on the screen:

```
The installation program discovered a previous version of the software. Would you like to
reinstall AMP? This will erase AMP's database. Reinstall (y/n)?
```

Type **y** and then press **Enter** to proceed.

> **CAUTION**
>
> This action erases the current database, including all historical information. To ensure that the AMP database is backed up prior to reinstallation, answer **n** at the prompt and contact your Value Added Reseller or Dell support.

Step 3: Installing AirWave Software

This step requires no user input, but you can follow the instructions to monitor its progress. The following message appears while the AirWave software is transferred and compiled.

```
STEP 3:  Installing AMP software
  This will take a few minutes.
  Press Ctrl-Alt-F9 to see detailed messages.
  Press Ctrl-Alt-F1 return to this screen.
```

Step 4: Checking the AirWave Installation

This step requires you to enter the user name and password for the ampadmin account. If you don't enter a user name, AirWave uses the default "ampadmin".

NOTE: *The ampadmin account will replace the root user account.*

After installing the software, the following message appears:

```
STEP 4:  Checking AMP installation
  Database is up.
  AMP is running version: (version number)

  Setting up secure accounts...
  Setting admin user name...
  Admin Username (default 'ampadmin'):
  Admin user is admpadmin
  Done
  Setting admin password...
  Admin Password:
  Verify Password:
  Done
  Done
  Removing alias for less...
  Done
  AMPCLI Setup completed
```

Step 5: Assigning an IP Address to the AirWave System

While the AirWave primary network interface accepts a DHCP address initially during installation, AirWave does not function when launched unless a static IP is assigned. Complete these tasks to assign the static IP address. The following message appears:

```
STEP 5: Assigning AMP's address
  AMP must be configured with a static IP.
--------------- Primary Network Interface Configuration -------------
       1)  IPv4 Address            : xxx.xxx.xxx.xxx
       2)  IPv4 Netmask            : xxx.xxx.xxx.xxx
       3)  IPv4 Gateway            : xxx.xxx.xxx.xxx
       4)  IPv6 Address (optional) : xxx.xxx.xxx.xxx
       5)  IPv6 Gateway (optional) : xxx.xxx.xxx.xxx
       6)  Primary DNS             : xxx.xxx.xxx.xxx
       7)  Secondary DNS           : xxx.xxx.xxx.xxx

       8)  Commit Changes
       0)  Exit (discard changes)

  If you want to configure a second network interface, please
  use AirWave's web interface, AMP Setup --> Network Tab
```

1. Enter the network information.

The IPv6 address and secondary DNS setting are optional.

2. To commit the changes, type **8** and then press **Enter**. To discard the changes, type **0** and then press **Enter**.

Step 6: Naming the AirWave Network Administration System

Upon completion of the previous step, the following message appears:

```
STEP 6:  Naming AMP
  AMP name is currently set to: AirWave Management Platform
  Please enter a name for your AMP:
```

At the prompt, enter a name for your AirWave server and press **Enter**.

Step 7: Generating AirWave's SSL Certificate

Upon completion of the previous step, the following message appears on the screen:

```
STEP 7:  Generating AMP's SSL Certificate
 Does AMP have a valid DNS name on your network (y/n)?
```

1. If AirWave does not have a valid host name on the network, type **n** at the prompt. The following appears:

```
Generating SSL certificate for < IP Address >
```

2. If AirWave has a valid host name on the network, type **y** at the prompt. The following appears:

```
Enter AMP's fully qualified domain name:
```

3. Type the AirWave DNS name and press **Enter**. The following message appears:

```
Generating SSL certificate for < IP Address >
```

Proceed to the next step when the system prompts you.

Completing the Installation

Upon completion of all previous steps, the following message appears.

```
CONGRATULATIONS! AMP is configured properly.
 To access the AMP web console, browse to https://<IP Address>
 Login with the following credentials:
 Username: admin
 Password: admin
```

NOTE

Once you log out, you can't log in as the root user. Subsequently, you must, you must use the ampadmin user generated during the software installation to log in to the CLI.

- To view the Phase 1 installation log file, type **cat /root/install.log**.
- To view the Phase 2 installation log file, type **cat /root/amp-install.log**.
- To access the AirWave WebUI, enter the AirWave IP address (IPv4 or IPv6) in the address bar of any browser. The AirWave WebUI then prompts for your license key. If you are entering a dedicated Master Console or AirWave Failover license, refer to "Supporting AirWave Servers with the Master Console" in the *Dell Networking W-AirWave 8.2.4 User Guide* for additional information.

Installing AirWave on VMware ESX(i)

This section provides information on installing AirWave on VMware® ESX(i). This section includes the following topics.

- "Requirements and Recommendations" on page 6
- "Creating a New Virtual Machine" on page 6

- "Installing AirWave on the Virtual Machine" on page 6

Requirements and Recommendations

- AirWave is supported on VMware ESX(i) 5.5 and later.
- Always install VMware Tools in a text-based environment prior to installing AirWave.
- Consult the *Dell Networking W-AirWave 8.2.4 Server Sizing Guide* to be sure that enough resources are allocated to the VM.
- If your VM host is hosting other instances, ensure that the AirWave instance has the highest priority.
- A virtual SCSI disk is recommended over IDE.

Creating a New Virtual Machine

Perform the following steps to create a new virtual machine.

1. From the VMware Infrastructure Client, select **Create a new virtual machine**.
2. Select **Next**, and then select **Typical > Virtual Machine Configuration**.
3. Name your virtual machine (for example, AirWave), and then click **Next**.
4. Select an available datastore with sufficient space for the number of APs that your AirWave will manage, choosing the right server hardware to comply with the hardware requirements in this document. Click **Next**.
5. Select the **Linux** radio button, and then select the OS. The recommended OS is CentOS 4/5/6 (64-bit). Click **Next**.
6. Select the appropriate number or processors, and then specify the minimum virtual RAM. Refer to the *Dell Networking W-AirWave 8.2.4 Server Sizing Guide*.
7. Accept the VMware default virtual network adapter, and click **Next**.
8. Allocate a virtual disk large enough to contain the AirWave operating system, application, and data files. Refer to the *Dell Networking W-AirWave 8.2.4 Server Sizing Guide*.
9. Review the virtual machine settings, and then click **Finish** when you are done.

Installing AirWave on the Virtual Machine

Installing AirWave on a VMware virtual machine is typically done in one of three ways:

- By writing an AirWave ISO to DVD, inserting the DVD into a physical drive on a VMware server, and then configuring the AirWave virtual machine to boot from the DVD.
- By copying the AirWave ISO to the VMware server's datastore or to a networked filesystem available to the VMware server, and then configuring the AirWave virtual machine to boot from the ISO file.
- By using either a local physical DVD or an AirWave ISO file from the VMware Infrastructure Client, and then creating a virtual CD on the virtual AirWave to point to and boot from that device.

Overall, the second option is likely the most efficient method to install AirWave. After booting the AirWave virtual machine with either a physical DVD or the ISO image file, the installation process with this method is identical to the steps outlined earlier in this document.

Installing in a Hyper-V Environment

This section provides information on installing AirWave on Hyper-V. This section includes the following topics.

Prerequisites

AirWave supports using Hyper-V Manager on the following server versions:

- Windows Server 2003 or later. However, you might experience boot issues using Windows Server 2012 Standard (not R2).
- Windows Server 2012 R2.

You must configure a legacy network adapter in order to install AirWave in a Hyper-V virtual environment.

Follow these steps to add a legacy network adapter:

1. During the initial setup of the virtual machine in Hyper-V Manager, navigate to the Add Hardware section.
2. Select Legacy Network Adapter from the Add Hardware window, then click **Add**.

Figure 2: *Add a Legacy Network Adapter*
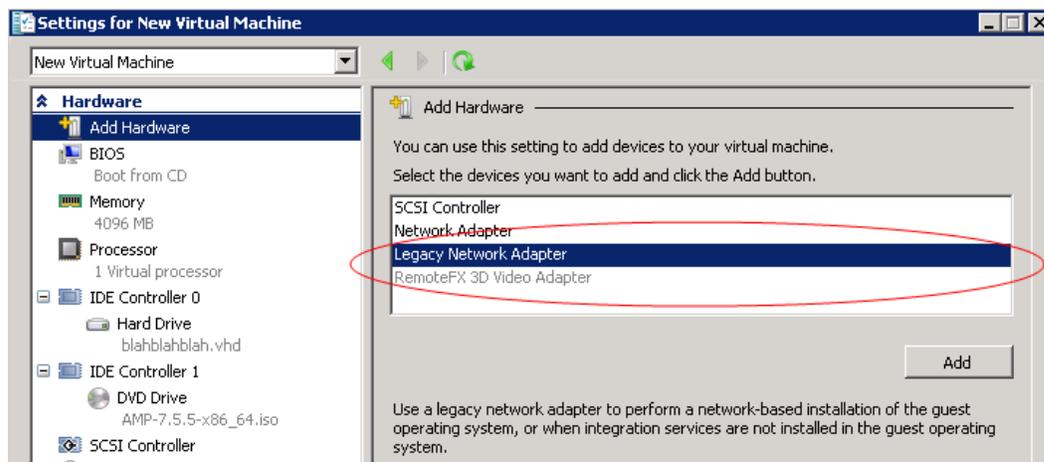
3. Under Network, select the virtual network you want to connect to. If you want to configure a static MAC address or virtual LAN identifier, enter the addresses.

Figure 3: *Add a Legacy Network Adapter*
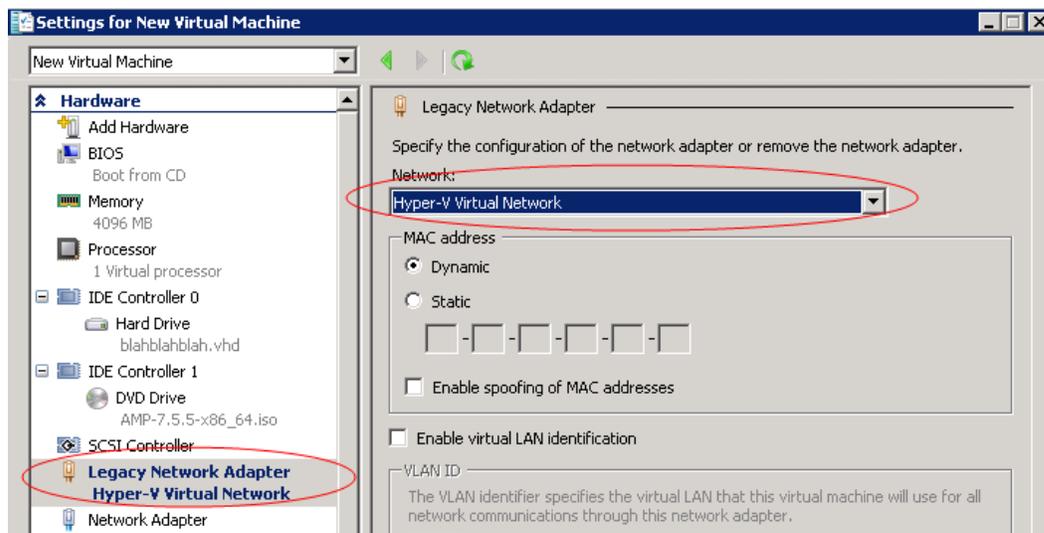
4. Click **OK**.

Installing AirWave on the Virtual Machine

Installing AirWave on a Hyper-V virtual machine is typically done in one of two ways:

- By writing an AirWave ISO to DVD, inserting the DVD into a physical drive on a Hyper-V server, and then configuring the AirWave virtual machine to boot from the DVD.
- By copying the AirWave ISO to the Hyper-V server's datastore or to a networked filesystem available to the Hyper-V server, and then configuring the AirWave virtual machine to boot from the ISO file.

Overall, the second option is likely the most efficient method to install AirWave. After booting the AirWave virtual machine with either a physical DVD or the ISO image file, the installation process with this method is identical to the steps outlined earlier in this document.

Upgrading AirWave

AirWave 8.2.4 has an upgrade tool that allows you to quickly download and install the software immediately. For the latest AirWave upgrade information, see the release announcement for detailed instructions and changes.

Upgrade the Software

If you're using AirWave 8.0.8.x or later, you can quickly upgrade to AirWave 8.2.4. After upgrading the software, you will no longer have root user access to the Linux shell.

Follow these steps to upgrade the software:

1. Log in to the AirWave server as the root user.
2. Run the upgrade utility:
   ```
   #start_amp_upgrade -v 8.2.4
   ```
   The upgrade utility looks for the local upgrade package. If the software is located, go to the next step when prompted to do so. If the software is not available:

   a. Enter your Dell support credentials to get the software from the Dell Support Center.

   b. [Manually download the software](#) and run the upgrade utility later.

   After the download completes, the following message appears while the software compiles:
   ```
   Validating the upgrade package...
   Upgrade package is OK.
   Using upgrade script extracted from local package.
   Upgrade package found in local cache.
   ******************************************************************************************
   After the upgrade, your system will be converted to use AMPCLI and the Linux shell will no
   longer be accessible.
   It is recommended that you cleanup some disk space before the upgrade by removing old AMP
   upgrade tarballs from /root directory and/or old pre-upgrade backups from /var/airwave-backup
   directory.
   ******************************************************************************************
   ```
3. After the AirWave services restart, you will see the following message:
   ```
   Setting up secure accounts...
   Setting admin user name...
   Admin Username (default 'ampadmin'):
   Admin user is admpadmin
   Done
   Setting admin password...
   Admin Password:
   Verify Password:
   Done
   Done
   Removing alias for less...
   Done
   AMPCLI Setup completed
   ```
   Enter the new ampadmin password. If you don't enter a user name, AirWave uses the default "ampadmin".
4. After setting the password, you will see the following message:

```
Your system has been converted to use AMPCLI.  You may now
log in as ampadmin. If you lose the password for ampadmin you
may log in as amprecovery (password recovery) on the console to reset
the ampadmin password
```

5. Finally, remove any OS user accounts to prevent unauthorized access.

Download Manually

Follow these steps to download the software manually:

1. Download the latest version of AirWave from the Dell download page: **download.dell-pcw.com**
2. Copy the file to the AirWave**/root** directory using WinSCP.

Minimum Requirements

Ensure that you have sufficient disk storage, memory, and hardware or software versions. As additional features are added to AirWave, increased hardware resources become necessary and hardware requirements vary by version. For the most recent hardware requirements, refer to the AirWave 8.2 Server Sizing Guide on the **Home > Documentation** page.

Supported Upgrade Paths

You can upgrade directly to AirWave 8.2.4 from the following software versions:

- 8.0.8 and 8.0.8.1
- 8.0.9
- 8.0.10
- 8.0.11, 8.0.11.1, and 8.0.11.2
- 8.2.0, 8.2.0.1, 8.2.0.2, and 8.2.0.3
- 8.2.1 and 8.2.1.1
- 8.2.2 and 8.2.2.1
- 8.2.3, 8.2.3.1, and 8.2.3.2

There is no direct upgrade between AirWave 7.7.x and 8.2.4.

Configuring and Mapping Port Usage for AirWave

The following table itemizes the communication protocols and ports necessary for AirWave to communicate with wireless LAN infrastructure devices, including access points (APs), controllers, routers, switches, and RADIUS servers. Assign or adjust port usage on the network administration system as required to support these components.

Table 2: *AirWave Protocol and Port Chart*

Port	Type	Protocol	Description		Device Type
21	TCP	FTP	Firmware distribution	>	APs or controllers
22	TCP	SSH	Configure devices	>	APs or controllers
22	TCP	SSH	Configure AirWave from the CLI	<	Laptop or workstation

Table 2: *AirWave Protocol and Port Chart (Continued)*

Port	Type	Protocol	Description		Device Type
22	TCP	VTUN	Support connection (optional)	>	Dell supports home office
22	TCP	SCP	Transfer configuration files or FW	<	APs or controllers
23	TCP	Telnet	Configure devices	>	APs or controllers
23	TCP	VTUN	Support connection (Optional)	>	Dell supports home office
25	TCP	SMTP	Support email (optional)	>	Dell supports email server
49	UDP	TACACS	AirWave Administrative Authentication	>	Cisco TACACS+
53	UDP	DNS	DNS lookup from AirWave	>	DNS Server
69	UDP	TFTP	Transfer configuration files or FW	<	APs or controllers
80	TCP	HTTP	Configure devices	>	Legacy APs
80	TCP	VTUN	Support connection (optional)	>	Dell supports home office
161	UDP	SNMP	Get and Set operations	>	APs or controllers
162	UDP	SNMP	Traps from devices	<	APs or controllers
162	UDP	SNMP	Traps from AirWave	>	NMS
443	TCP	HTTPS	Web management	<	Laptop or workstation
443	TCP	HTTPS	WLSE polling	>	WLSE
443	TCP	VTUN	Support connection (optional)	>	Dell supports home office
1701	TCP	HTTPS	AP and rogue discovery	>	WLSE
1741	TCP	HTTP	WLSE polling	>	WLSE
1812	UDP	RADIUS Auth	Authenticate & authorize AirWave administrative users on a RADIUS server.	>	RADIUS auth server
1813	UDP	RADIUS accounting	Retrieve user names for authenticated WLAN clients from NAS (captive portal, controller, autonomous AP). Only used when user names are not available in the SNMP MIB of a controller or autonomous AP.	<	RADIUS accounting client

Table 2: *AirWave Protocol and Port Chart (Continued)*

Port	Type	Protocol	Description		Device Type
2002	TCP	HTTPS	Retrieve client authentication info	>	ACS
5050	UDP	RTLS	Real Time Location Feed	<	Dell thin APs
8211	UDP	PAPI	Real Time Feed (AMON)	< >	WLAN controllers
		ICMP	Ping Probe	>	APs or controllers

AirWave Navigation Basics

Every AirWave page contains the following sections:

- "AirWave Header Statistics" on page 11
- "AirWave Search Utility" on page 11
- "Navigation Sidebar" on page 11
- "Filtered Views" on page 12

The AirWave pages also contain links to the *Dell Networking W-AirWave 8.2.4 User Guide*. Access the help topics by clicking in the upper-right corner of the Web UI.

AirWave Header Statistics

The top header of each AirWave WebUI page displays icons that provide counts on newly discovered devices, device status, mismatches, rogues, clients, and both unacknowledged and severe alerts. These icons also provide direct links for immediate access to key system components.

For information about customizing the header statistics, see the *Dell Networking W-AirWave 8.2.4 User Guide*.

Figure 4: *AirWave Header Statistics Icons*

AirWave Search Utility

The top header of each AirWave UI page includes a search utility that allows you to search for information, including:

- Notes
- Firmware versions
- Serial numbers
- MAC addresses
- IP addresses
- Users

Navigation Sidebar

The navigation bar allows you to access WebUI pages within AirWave. When you click in the AirWave WebUI and select a component from the navigation sidebar, AirWave will display monitoring, management, details, and dashboard pages to the right.

Some navigation menus, such as AMP Setup, might be hidden from a user depending on the user's role.

Figure 5: *Navigation Sidebar*

Filtered Views

Default views are predefined in Dell Networking W-AirWave, and you can't modified the columns in these views. However, you can create a new views and filter your data from the following pages:

- APs/Devices (List, Up, Down, Mismatched)
- Groups > Monitor

To create a filtered view:

1. Click ⌄ at the left of the table title, then select **New View.**
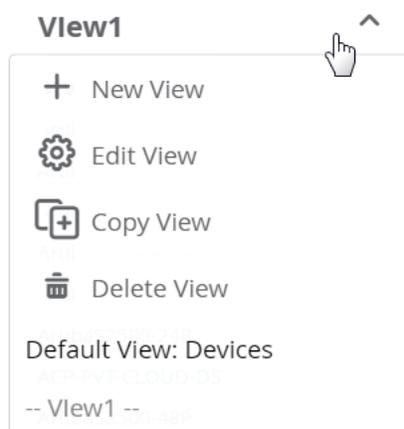
2. In the Filtered View window, enter the name of the new view.

Figure 6: *Creating a Filtered View*
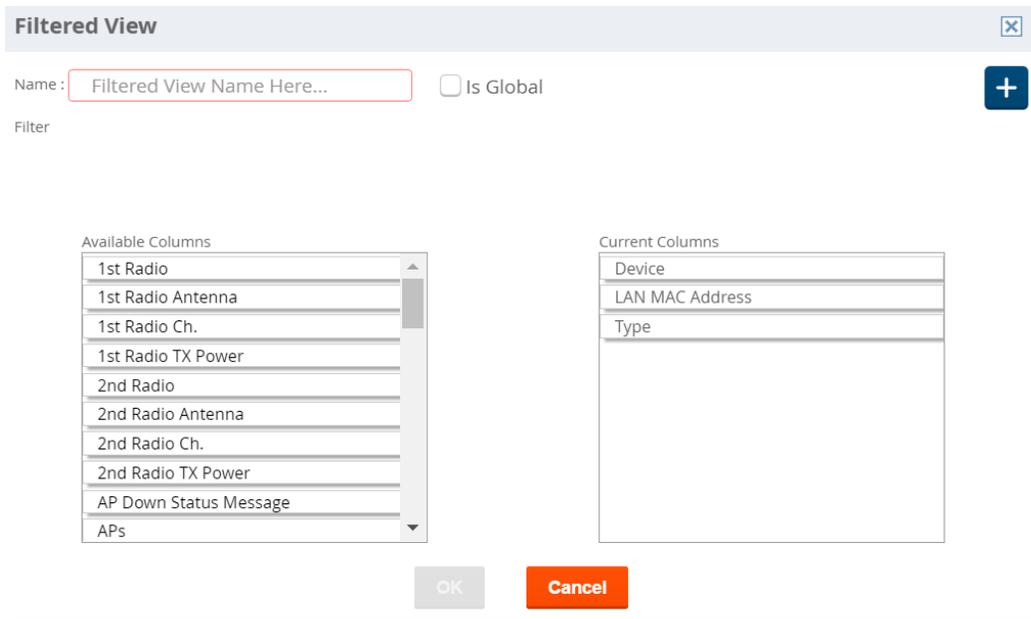
3. (Optional) AirWave administrators can select the **Is Global** check box to give all users access to the filtered view. Administrators are able to edit any global view they can see in the filtered view drop-down list.

4. Click to add a new filter. A new list of parameters is added to the **Filter** field.

5. Scroll the list of filter parameters and select a **Device** or **Radio** parameter. If required, enter search parameters such as "=" to refine the filter parameters.

6. (Optional) To create a filtered view with multiple filter parameters, click again and define any additional filter parameters.

   For example, to create a view that displays APs with more than zero clients but less than five clients, you would need to create one filter with the parameters **Clients > 0**, and a second filter with the parameters **Clients < 5**.

7. Drag and drop data columns from the **Available Columns** list to the **Current Columns** list to select which columns display in the view. You can reorder the columns in the **Current Columns** list by dragging and dropping the data column to a different place in the list.

8. Click **OK** to save the view.

You can edit a custom filter view at any time, by selecting clicking the down arrow in the table titlebar, selecting **Edit View**, and modifying filter parameters and column displays.

Getting Started with AirWave

Use your browser to navigate to the hostname or static IP address assigned to the AirWave internal page, as shown in Figure 7. Enter the User Name and Password as **admin/admin** for your initial login, and then select **Log In**.

Figure 7: *AirWave Login Form*

If desired, you can set one of the available languages for your login. AirWave will remember your selected language until you log out and select another. You must log out in order to select a different language.

The first page to appear after you initially log in is the **Home > License** page. Paste the AirWave license key you received into the license field on this page, then click **Save** to display the Dell Networking W-AirWave licensing agreement.

Click **I Accept** to agree to the terms of the license agreement and apply the license key.

For subsequent logins, your browser launches the AirWave **Home > Overview** page.

NOTE

AirWave pages are protected via SSL. Some browsers will display a confirmation dialog for your self-signed certificate. Signing your certificate will prevent this dialog from displaying. Changing the default login and password on the **AMP Setup > Users** page is recommended. Refer to the procedure Creating AirWave User Roles in the *Dell Networking W-AirWave 8.2.4 User Guide* for additional information.

Changing Login Credentials

Dell strongly recommends that you change the system default credentials

- The password for the default web interface user may be changed using the web interface itself, from the **AMP Setup > Users** page. Click the pencil icon to edit the admin user.
- The password for the root user can be changed by entering the command **passwd** on the server command line prompt.

Contacting Support

Web Site Support	
Main Website	**dell.com**
Contact Information	**dell.com/contactdell**
Support Website	**dell.com/support**

Web Site Support	
Documentation Website	**dell.com/support/manuals**

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