UBIQUITI NETWORKS

airControl®

Network Management Application

Release Version: 2

User Guide

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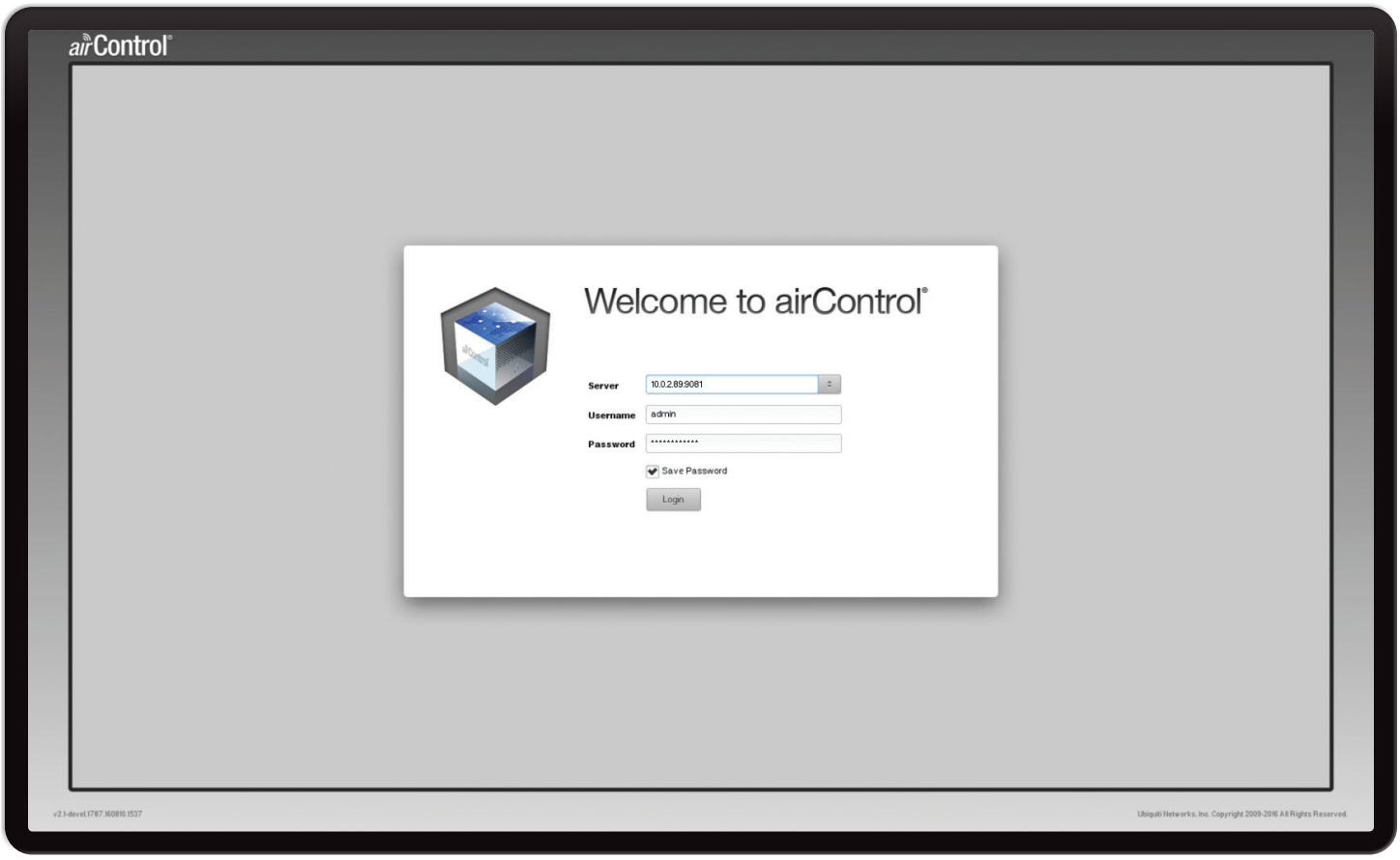


Chapter 1: Overview

Introduction

Welcome to the airControl® network management application by Ubiquiti Networks. This User Guide describes the airControl application version 2.

Using airControl, a network administrator at a single location can manage groups of Ubiquiti devices: monitor the network, track usage, and make changes to more than one device at a time. airControl offers these features:

- airOS® Device Monitoring and Management
- Mass Configuration for airOS 5 and airOS 6
- Mass Firmware Upgrade
- Network Topology Visualization
- Setup of Alerts and Notifications
- Smart Grouping and Filtering of Devices (using Device Groups)
- Device Discovery and Automatic Network Topology Resolution
- Configurable Charts
- Tasks and Task Scheduling
- Configurable Device List (Control View)
- Map Support
- Ping, Speed Test
- Malware Cleanup Utility

Supported Products

airControl supports Ubiquiti® airMAX® M series, airMAX ac series, airFiber® series, and airFiber X series products, including the following:

- airFiber, airFiber X
- Rocket®M, Rocket M GPS, Rocket M Titanium
- Rocket® ac, Rocket ac Prism
- Bullet™M, Bullet M Titanium
- LiteBeam® M, LiteBeam ac
- NanoBeam®M, NanoBeam ac, NanoBridge M
- NanoStation®locoM/NanoStationM
- PicoStation®M
- PowerBeam®M, PowerBeam ac
- PowerBridge®M
- airGrid®M
- airGateway®
- WispStation™M

For more information, visit: **www.ubnt.com**

System Requirements

- Microsoft Windows 7/8/10, Linux, or Mac OS X
- Java Runtime Environment 1.8 (or above)
- Web Browser: Google Chrome

Getting Started

The airControl software consists of a server application and a client application, which are supported on the following platforms:

- Linux
- Windows
- Mac OS X (client only; see note below)

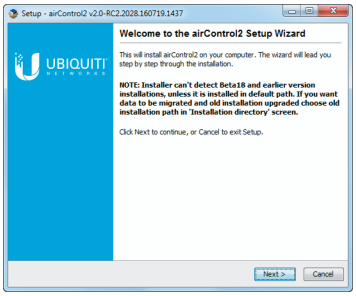
Note: Mac OS X supports the client software only; the server software must be installed on a Linux or Windows platform.

Installation

When you install airControl on Linux or Windows, both the server and client applications are installed. Install the airControl software as follows:

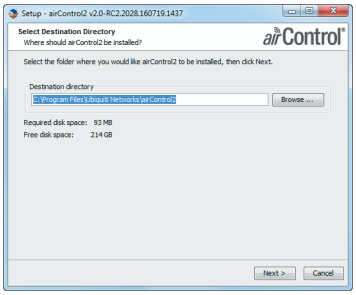
Note: The following steps show the Windows-based installation only. The installation is similar for Linux.

1. Double-click the installation file to run the install wizard. When the *Welcome* screen appears, click **Next** to continue.

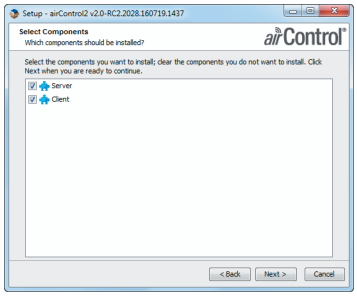


2. Read the license agreement. Then click **I accept the agreement** and click **Next** to continue.

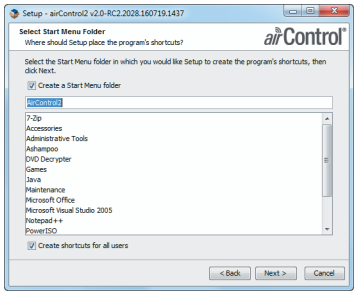
3. The wizard asks where to install airControl. Accept the default location or specify a location. Then click **Next**.



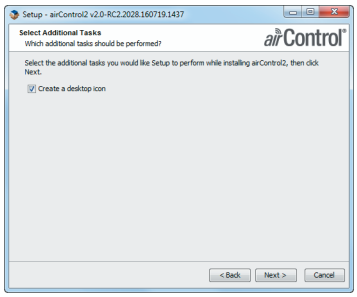
4. Specify which components to install, or keep the default (both server and client). Click **Next**.



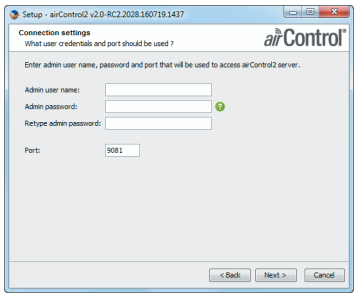
5. Specify the desired startup options and click **Next**.



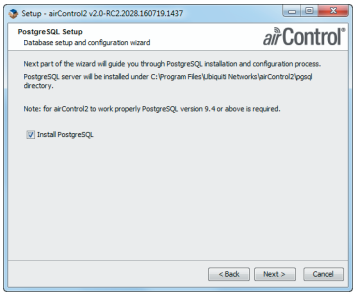
6. Specify whether or not you want a desktop icon and click **Next**.



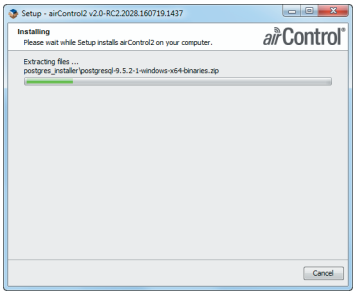
7. Specify the login credentials (**user name** and **password**) for the airControl server's admin account. Then, click **Next**.



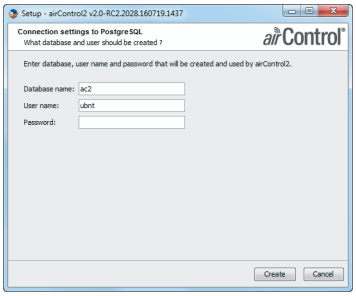
8. The next few dialogs involve setting up the PostgreSQL server and database. Specify all requested information and click **Next** to continue.



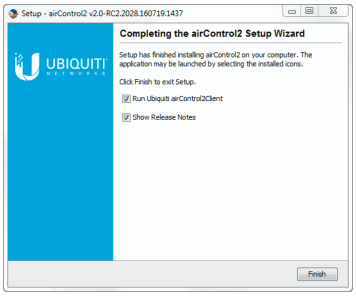
9. The installation wizard will begin installing the selected airControl components.



10. When the software is finished installing, enter the connection settings (**Database name**, **User name**, **Password**) to be used by airControl to access the PostgreSQL database.



11. airControl installation is complete. Click **Finish** to exit.

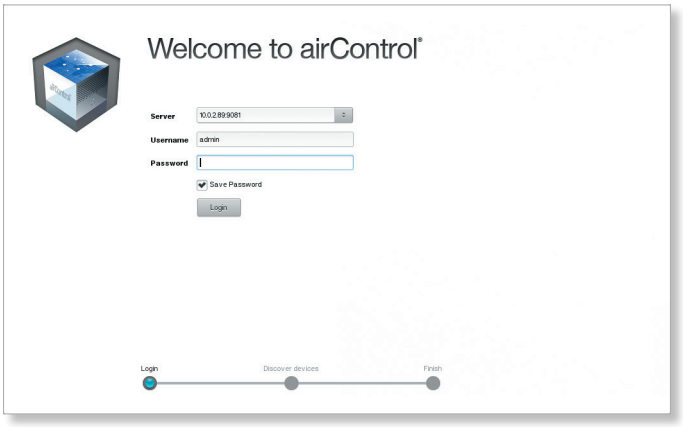


12. If you selected *Show Release Notes* in step 11, the release notes will be displayed.
13. If you selected *Run Ubiquiti airControl2 Client* in step 11, continue to step 2 of the next section.

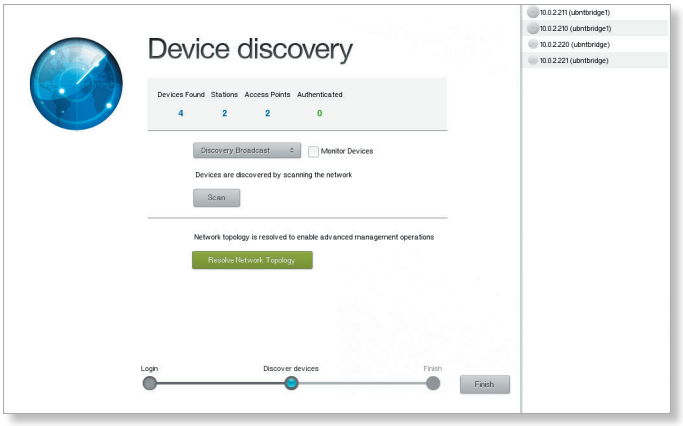
Initial Login

This section describes the steps to take the first time you run airControl:

1. To open the client, double-click the airControl icon (icon location depends on platform as well as the particular options that were selected during installation).
2. The *Welcome to airControl* screen is displayed. Enter the **Server** IP address, **Username**, and **Password**. (To remember the password for future logins, select **Save Password**.) Click **Login** to continue.



3. Next, airControl performs device discovery. Discovered devices are displayed on the right side of the window:



4. To manually perform device discovery:
   a. Click the drop-down box and select the type of discovery to perform:
      - **Discovery Broadcast** Discover devices by scanning the network.
      - **Scan IP Range** Discover devices by scanning a range of IP addresses. (Enter the IP address range when prompted.)
   b. If you want discovered devices to be monitored, select **Monitor Devices**.
   c. Click **Scan** to start scanning for devices.

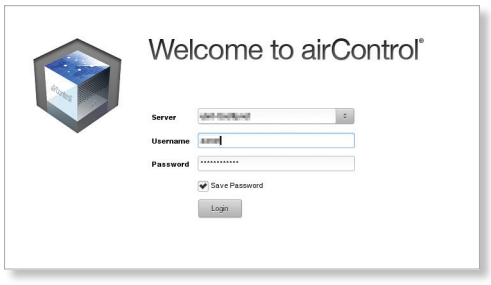
5. (Optional) To perform network topology resolution:
   a. Click **Resolve Network Topology**.
   b. The *Topology Resolution* dialog is displayed.
   c. Enter the **Username**, **Password**, and **SSH Port**.
   d. Click **Proceed** to begin.
6. Click **Finish** to continue.
7. The airControl application opens.

You can now use the airControl client to manage and configure your networks. For detailed information on the airControl client, refer to the appropriate chapter of this User Guide.

- **"User Options" on page 7**
- **"Device Tree" on page 11**
- **"Control Tab" on page 13**
- **"Live Tab" on page 17**
- **"Device Details" on page 21**
- **"Application Drawer" on page 25**
- **"Context Menu" on page 35**

Subsequent Login

1. Double-click the airControl icon .
2. The login screen displays the airControl *Server* address, *Username*, and *Password* entered during installation.

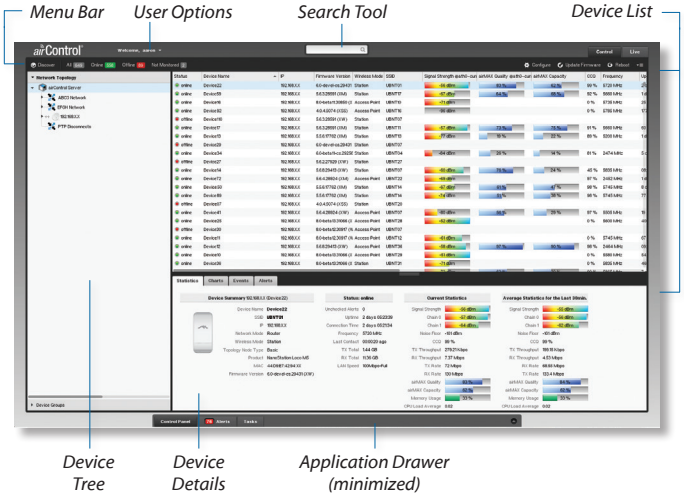


3. If you want to use a different airControl server, enter that server's login credentials.
4. Click **Login** to log into airControl.

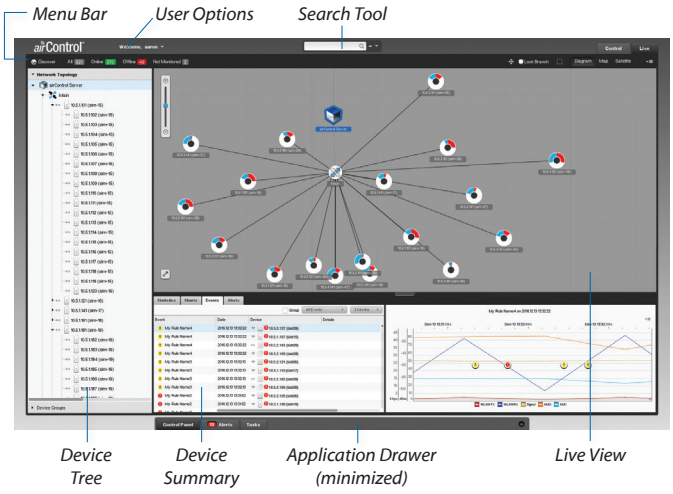
User Interface Overview

The airControl User Interface (UI) has two views, depending whether the *Control* tab or the *Live* tab is selected, as follows:

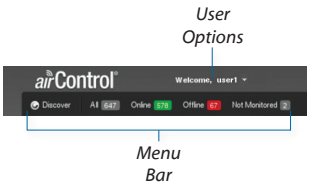
- *Control* tab display:



- *Live* tab display:



On both the *Control* tab and *Live* tabs, the following controls are displayed at the top of the window:



- **User Options** This drop-down box provides access to user account settings, including display configuration, and the logout option. For detailed information on the user options, see **"User Options" on page 7**.
- **Menu Bar** The menu bar contains the device discovery tool and filtering options. On the *Live* tab there are also options (at the far right) for configuring the live display.

- **Search Tool** When you enter a search string in the search box, matching devices will be highlighted in the *Device List* (*Control* tab) or *Live View* (*Live* tab).

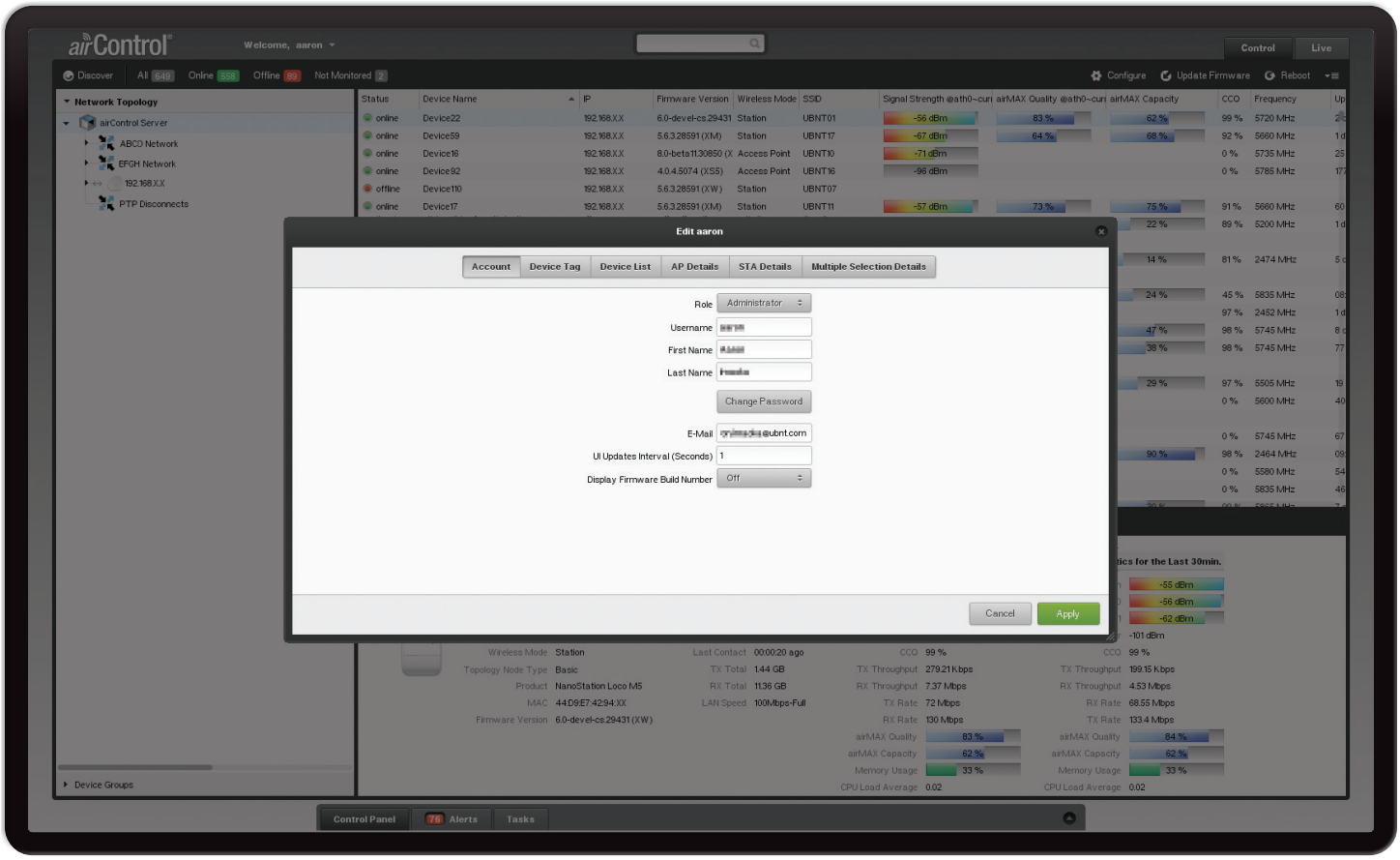
  Search results are displayed as follows:

  - On the *Control* tab, matches are filtered in the *Device List*.
  - On the *Live* tab, matches are displayed one at a time. Click the up and down arrows to the right of the search box to navigate through the list of matches. Each match will be highlighted and centered in the pane.

The information display area is located below the controls and is divided into several panes:

- **Device Tree** This section displays the network nodes in a tree format. For detailed information, see **"Device Tree" on page 11**.
- **Device List** (Available when *Control* tab is selected.) This part of the UI window lists detailed information for network devices that match the active filter setting. For detailed information, see **"Control Tab" on page 13**.
- **Live View** (Available when *Live* tab is selected.) This part of the UI window displays a visual representation of your network devices plotted on a grid or map. For detailed information, see **"Live Tab" on page 17**.
- **Device Summary** This section displays statistics, charts, and events for the selected device. For detailed information, see **"Device Details" on page 21**.
- **Application Drawer** This drawer provides access to the Control Panel, and displays alerts and tasks. For detailed information, see **"Application Drawer" on page 25**.

You can resize any of the panes in the UI window as desired (click and drag the borders between the panes).

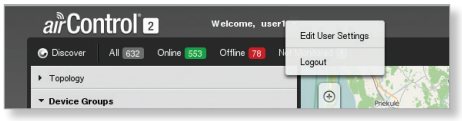


Chapter 2: User Options

Located at the top left of the window, the user options provide access to user account settings, including display configuration, and the logout option.

To access the user options, click the arrow next to *Welcome, <username>*. Then do one of the following:

- To log out of airControl 2, select **Logout**.
- To edit user account settings, select **Edit User Settings**.



The *Edit <Username>* window is displayed, containing the following tabs:

- Account
- Device Tag
- Device List
- AP Details
- STA Details
- Multiple Selection Details

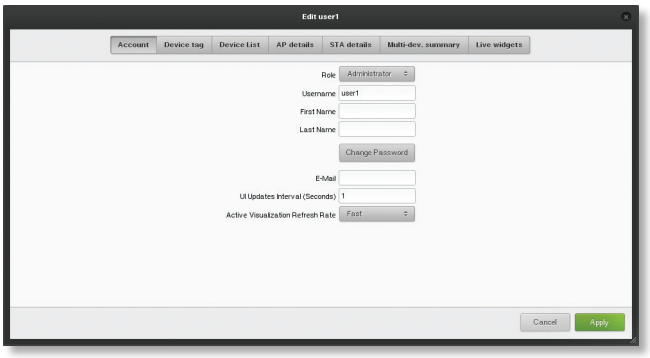
These buttons are at the bottom right corner of each tab:

Apply Applies all changes you have made on the tab.

Cancel Cancels all changes you have made on the tab.

Account Tab

The *Account* tab contains the settings for the user account:



Role Displays the role assigned to the user account. There is one predefined role, *Administrator*; additional roles must be manually defined using *Control Panel* > *User Roles*.

Username Displays the user name of the account.

First Name Displays the user's first name.

Last Name Displays the user's last name.

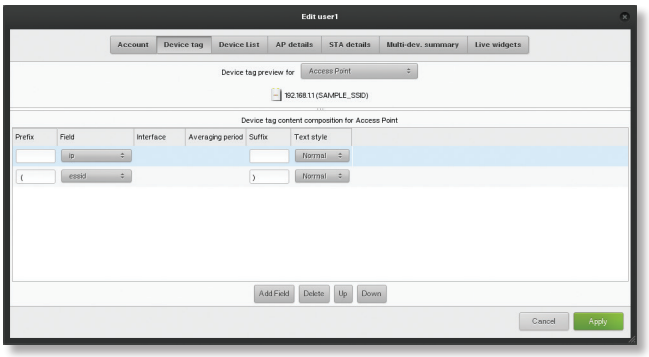
E-Mail Displays the user's e-mail address.

UI Update Interval (Seconds) This is the UI's update interval in seconds. The default is *1*.

Display Firmware Build Number Used to display the firmware build number next to the firmware version number. Values are *No* (default) or *Yes*.

Device Tag Tab

The *Device Tag* tab allows you to configure the tags used to label all devices for quick identification:



Device tag preview for The device type whose tag is being configured. Select **Access Point** or **Station**.

Immediately below is a sample of the tag as currently configured. Any changes you make to the remaining settings are immediately reflected in this sample.

Prefix (Optional) Specifies a prefix to be added to the front of the tag.

Field Specifies the field to be displayed, with information related to the device:

- Access Point MAC
- ACK Timeout
- Added By
- AF Capacity RX
- AF Capacity TX
- AF Channel Width RX
- AF Channel Width TX
- AF Duplex
- AF Frequency RX
- AF Frequency TX
- AF Link State
- AF Operating Mode
- AF Remote IP
- AF Remote MAC
- AF TX Modulation Rate
- AF TX Power
- airMAX Capacity
- airMAX Quality
- airTime
- Alert Count
- Bytes RX
- Bytes TX
- Capacity Downlink
- Capacity Uplink
- CCQ
- CINR
- Connection Time
- CPU Load
- CPU Usage
- Current Operation
- Description
- Device Added Time
- Device Name
- Device Status
- Device Tag
- Distance
- Firmware Version
- Frequency
- Interface Status
- IP
- LAN Speed
- Last Contact
- Latency
- MAC
- Memory Free
- Memory Total
- Memory Usage
- Modulation Rate RX
- Modulation Rate TX
- NAT
- Network Mode
- Noise Floor
- Number of Clients
- Ping Latency
- Product
- Rate RX
- Rate TX
- Signal Chain 0
- Signal Chain 1
- Signal Strength
- SSID
- Throughput RX
- Throughput TX
- Topology Node Type
- Uplink Type
- Upstream Interface
- Uptime
- Wireless Mode

Interface (Not available for all fields.) The interface for the selected *Field*. Select **WLAN** or **LAN**.

Averaging period (Not available for all fields.) The averaging period for the selected *Field*. Select **current**, **5min**, or **30min**.

Suffix (Optional) Specifies a suffix to be added to the end of the tag.

Text style The text style to apply to the displayed tag. Select **Normal** or **Bold**.

Add Field Click this button to add a new field.

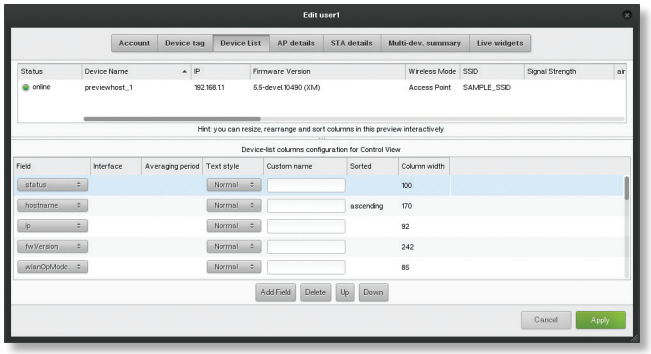
Delete Click this button to delete the selected field.

Up Click this button to move the selected field up one row in the list.

Down Click this button to move the selected field down one row in the list.

Device List Tab

The *Device List* tab allows you to configure the format of the device list displayed in Control mode. You can select which fields will be displayed:



Displayed at the top of the window is a sample of the device list. This sample immediately displays any changes you make to the *Device list columns configuration* section, or to the sample itself. For information on customizing the device, see **"Customizing the Device List" on page 9**.

Device List Columns Configuration

This section contains the following options:

Field Specifies a field to display. For a list of fields and their descriptions, refer to **"Device Fields" on page 45**.

Interface (Not available for all fields). The interface for the selected *Field*. Select **WLAN** or **LAN**.

Averaging period (Not available for all fields.) The averaging period for the selected *Field*. Select **current**, **5min**, or **30min**.

Text style The text style to apply to the displayed field. Select **Normal** or **Bold**.

Custom Name (Optional) This is used to specify a user-defined column name.

Sorted Read-only field showing the sort order, if applicable, in effect for the field: *ascending* or *descending*.

Column Width Read-only field indicating the width of the column in pixels.

Add Field Click this button to add a new field.

Delete Click this button to delete the selected field.

Up Click this button to move the selected field up one row in the list.

Down Click this button to move the selected field down one row in the list.

Customizing the Device List

You can customize the device list display, including:

- Which fields are displayed (add/delete fields)
- The column heading
- The width of each field's column
- The format (normal or bold) of displayed field values

Instructions for customizing the device list are as follows:

Adding a Field

1. Click **Add Field**. A new row appears in the *Device list columns configuration* section of the dialog.
2. In the new row, click the *Field* drop-down and select the desired field.

   Note: For information on the fields, refer to **"Device Tag Tab" on page 8**.

3. If applicable, select the *Interface* and/or *Averaging Period*.
4. Click **Apply**.

Deleting a Column

1. Highlight the appropriate row in the *Device list columns configuration* section of the dialog.
2. Click **Delete**.
3. Click **Apply**.

Changing the Position of a Field

There are two methods you can use. Either:

1. Click and hold the field's column heading in the sample (at the top of the dialog).
2. Drag and drop the column at its new position.
3. Click **Apply**.

Or:

1. Highlight the appropriate row in the *Device list columns configuration* section of the dialog
2. Click **Up** to move the field to the left in the device list, or click **Down** to move it to the right in the device list.
3. Click **Apply**.

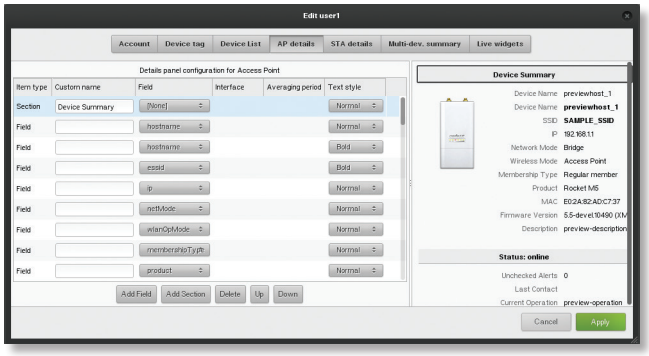
Modifying a Field

1. Configure the attributes (*Text style*, *Custom name*, etc.) of the field as desired.
2. To change the sort order, click the column heading in the sample (at the top of the dialog). Each click toggles between ascending and descending order.
3. To change the column width, drag the divider on the right of the column.
4. Click **Apply** to save the changes.

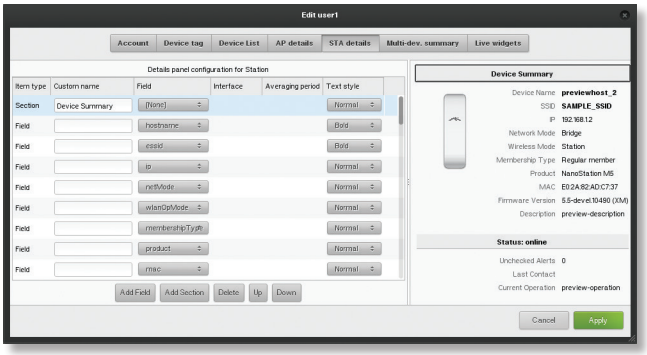
AP Details, STA Details, and Multiple Selection Details Tabs

The *AP* (access point) *Details*, *STA* (station) *Details*, and *Multiple Selection Details* tabs are used to configure the information that is displayed on the *Statistics* tab (lower part of window) in Control mode. They are differentiated as follows:

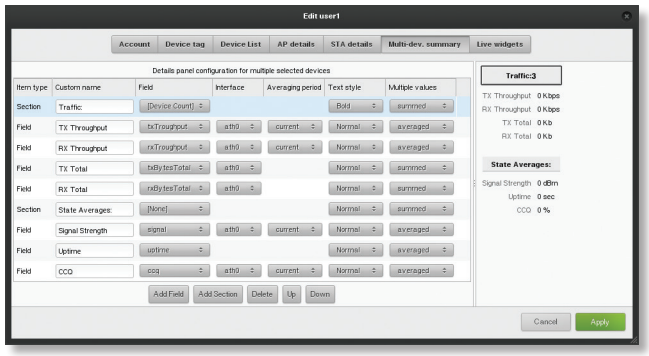
- Use the *AP Details List* tab to configure AP information.



- Use the *STA Details List* tab to configure station information.



- Use the *Multiple Selection Details* tab to configure the information for multiple device selections.



Displayed on the right side of the window is a sample of the AP, station, or multiple-device information. Changes you make to the remaining settings are immediately reflected in this sample.

The fields are the same for all three tabs and are as follows:

Item Type Read-only field that specifies the type of item to be configured: *Section* or *Field*. The value is determined by the button (*Add Field* or *Add Section*) used to create the item's entry.

Custom Name Specifies a custom name to display next to the value of the field or section.

Field Specifies a field to display. For a list of fields and their descriptions, refer to **"Device Fields" on page 45**.

Interface (Not available for all fields). The interface for the selected *Field*. Select **WLAN** or **LAN**.

Averaging period (Not available for all fields.) The averaging period for the selected *Field*. Select **current**, **5min**, or **30min**.

Text style The text style to apply to the displayed field or section. Select **Normal** or **Bold**.

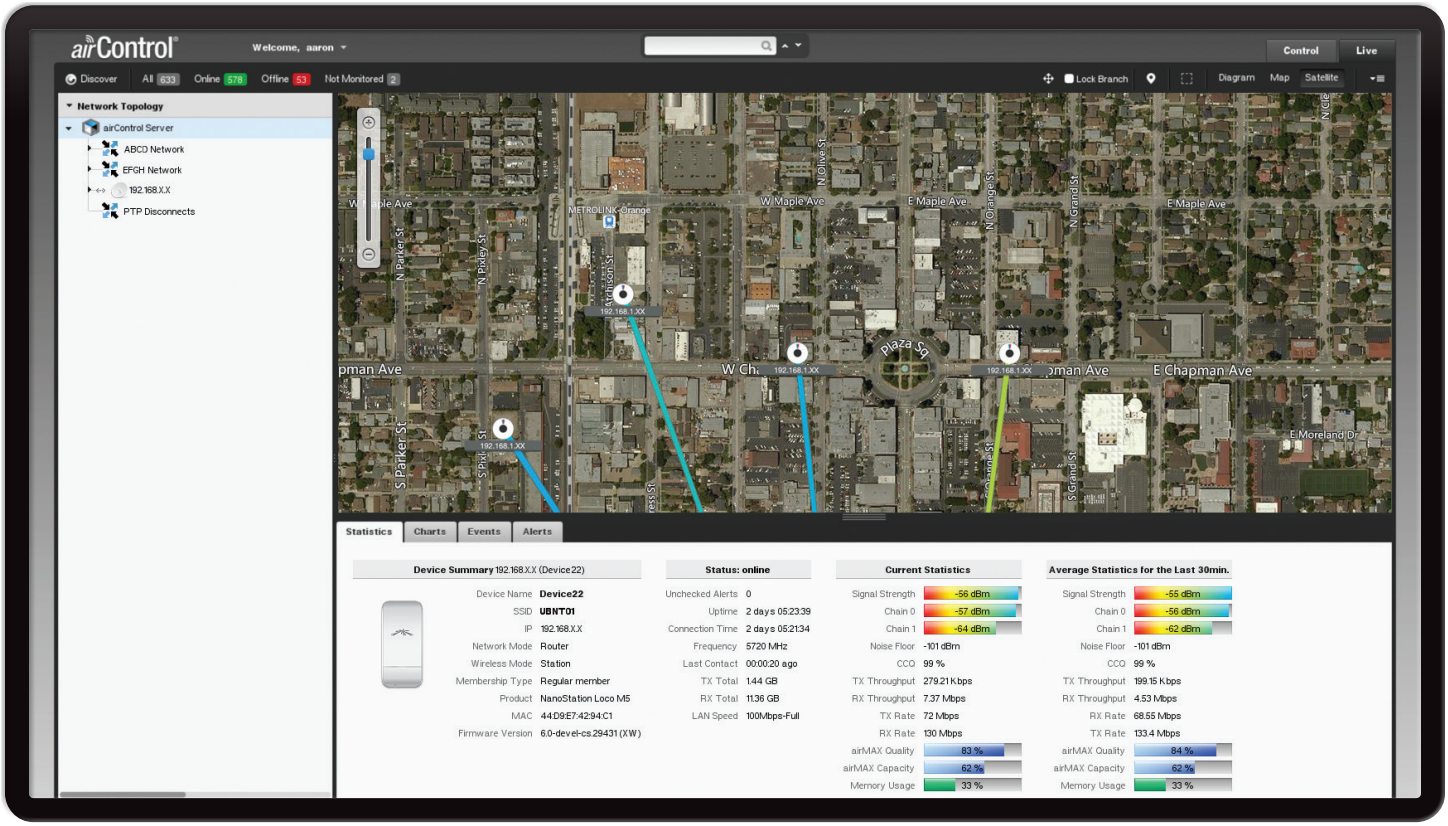
Add Field Click this button to add a new field.

Add Section Click this button to add a new section. The configured item will be displayed as the title of the new section.

Delete Click this button to delete the selected field or section.

Up Click this button to move the selected field or section up one row in the list.

Down Click this button to move the selected field or section down one row in the list.



Chapter 3: Device Tree

Located on the left side of the window, the device tree displays the system's network topology in a tree format.

The nodes in the device tree can be organized by topology or by device group:

- To view the device tree by network topology, select **Topology**.
- To view the device tree by device group, select **Device Groups**.

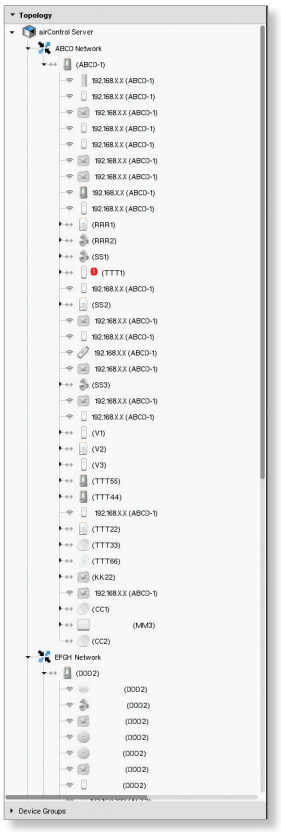
In both the topology and device group views, the ▶ icon next to a node indicates that the node has subnodes. To display the subnodes, click the ▶ icon (the icon will change to ▼).

To collapse a node's subnodes, click the ▼ icon next to the node.

To quickly collapse multiple levels of subnodes, click the ▼ icon next to the next higher level node.

Topology

The device tree can display the nodes based on the system topology. This is the default view.



Each node is labeled with an icon and a tag which is configured in the User Options (see **"Device Tag Tab" on page 8**).

For access points and station devices the icon is a thumbnail of the device.

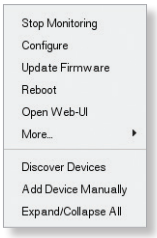
Other icons are as follows:

 airControl server (root node)

 Manually added router

Context Menu

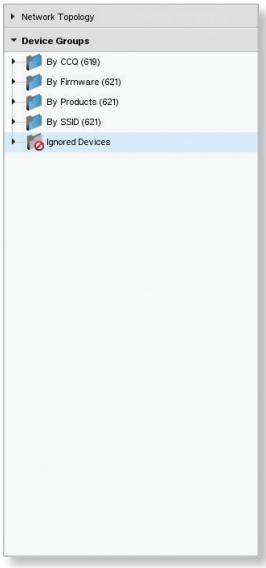
The context menu, accessed by right-clicking, provides options that allow you to perform various useful functions:



For detailed information on the context menu options, refer to the appropriate section in **"Context Menu" on page 35**.

Device Groups

The device tree can display the nodes by device groups (categories).

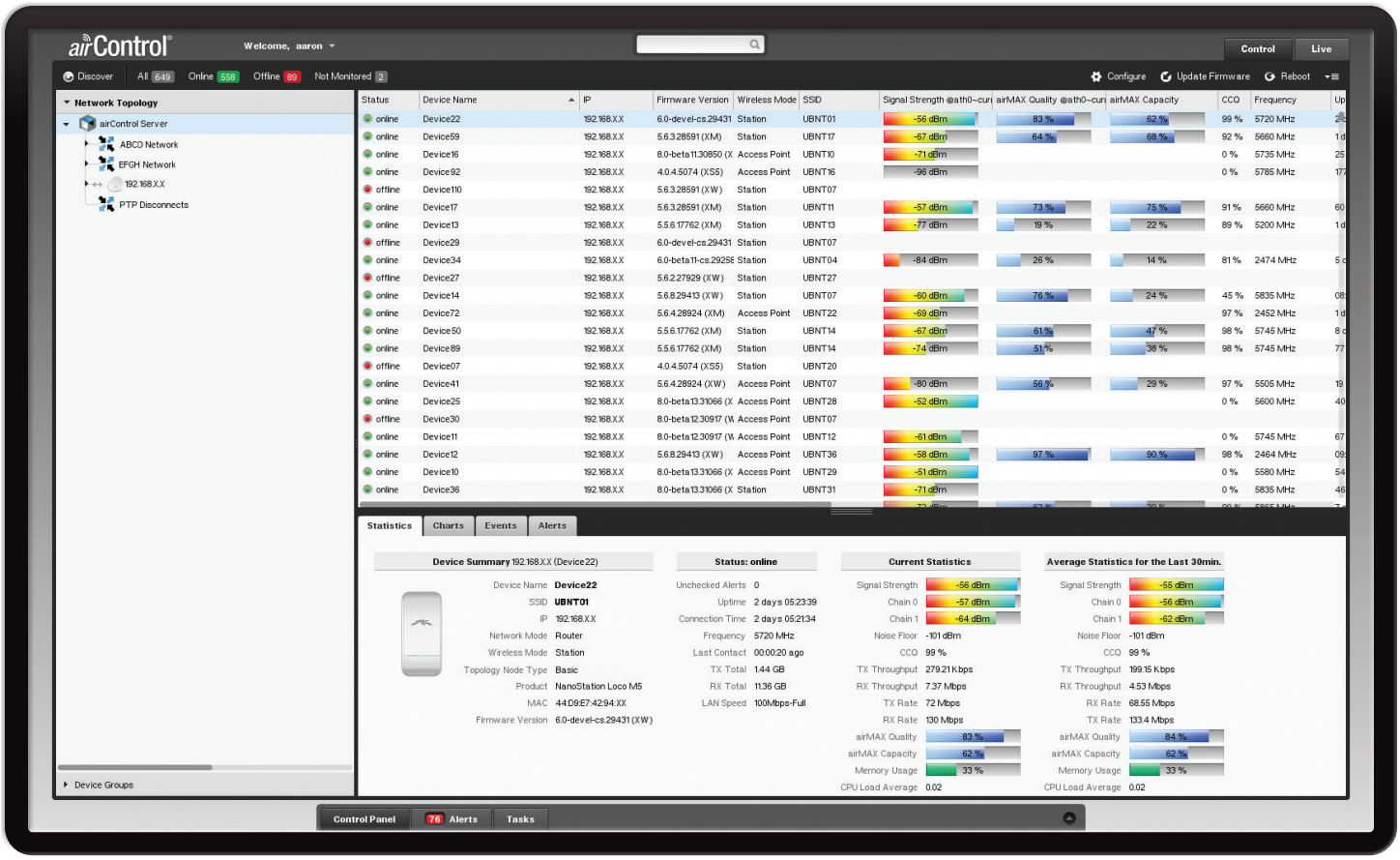


To display nodes by device groups, click **Device Groups**. The default device groups are:

- **By Firmware** Expand this node to group devices by firmware version. Clicking any node will list all devices whose firmware version number matches the node.
- **By Products** Expand this node to group devices by product model name. Clicking any node will list all devices that are the same product as the node name.
- **By SSID** Expand this node to group devices by SSID. Clicking any node will list all devices whose SSID matches the node's SSID.
- **Ignored Devices** Expand this node to display devices for which you do not have access credentials.

You can perform the following operations on the *Device Group* list by right-clicking and using the context menu.

- **Add a new folder** Refer to **"New Folder" on page 42**.
- **Add a new device group** Refer to **"New Devices Group" on page 42**.
- **Edit an existing device group** Refer to **"Edit Devices Group" on page 43**.
- **Remove device group** Refer to **"Remove <group>" on page 43**.

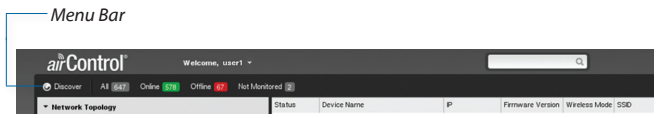


Chapter 4: Control Tab

The *Control* tab displays the *Device List*, a list of detected devices that match the active filter setting (*All*, *Online*, *Offline*, *Not Monitored*). For each device, various types of statistics and information are displayed. The display is updated with the latest information as conditions change.

Menu Bar

The *Control* tab's the menu bar has the following options:



Discover Select this option to use the device discovery feature. For details on how device discovery works, refer to **"Device Discovery" on page 13**. For information on configuring device discovery options, refer to **"Device Discovery" on page 30**.

All Select this option to cause the *Device List* to display all devices.

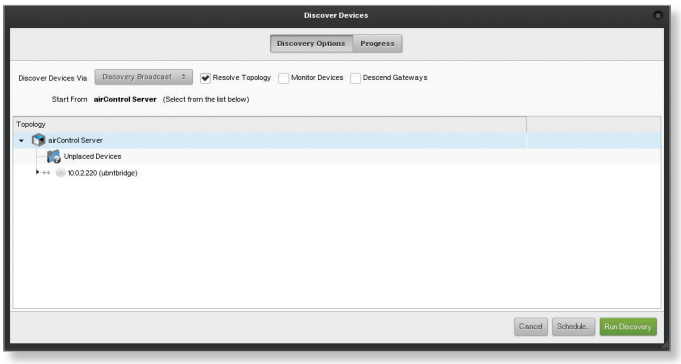
Online Select this option to cause the *Device List* to display online devices only.

Offline Select this option to cause the *Device List* to display offline devices only.

Not Monitored Select this option to cause the *Device List* to display offline devices only.

Device Discovery

Use the device discovery feature to automatically detect and connect to devices in your network. When you select **Device Discovery** from the menu bar, the following dialog is displayed:



Discover Devices Via Specify how devices should discovered: *Discovery Broadcast* or *IP-Range Scan*.

Resolve Topology Select this option to have airControl resolve the network topology of discovered devices.

Monitor Devices Select this option if you want airControl to automatically monitor discovered devices, so that you don't have to start monitoring later.

Descend Gateways Select this option to extend device discovery to gateways – airControl will log into each gateway and discover devices in its subnet (to configure a device as a gateway, use the *Device Properties* dialog).

Start From Specifies the starting point for the search. To set the starting point, select a device from the *Topology* diagram.

Topology Displays a diagram of the network topology.

For additional device discovery settings, refer to **"Device Discovery" on page 30**.

When you are finished configuring the device discovery settings, you can either run device discovery now, or you can schedule device discovery to run at a later time.

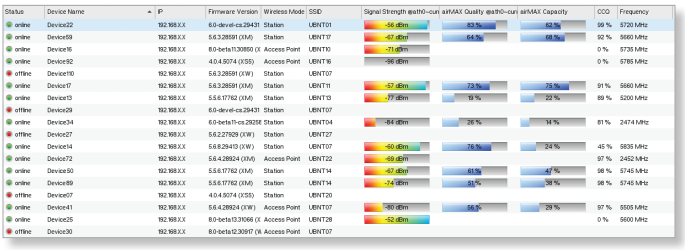
Run Device Discovery Now

Click **Run Discovery** to start the device discovery process. To check on the progress (or see the results when the process is finished), click the **Progress** tab.

Schedule Device Discovery For Later

Click **Schedule** to schedule device discovery to run at a later time. Refer to **"Scheduling Tasks" on page 43** for further details on task scheduling.

Device List



The *Device List* displays statistical and status information for network devices in a textual format. The following fields are displayed:

Note: Refer to the *Field* setting in **"Device Tag Tab" on page 8** for descriptions of all other fields (those not displayed by default).

Status The status of the device: *online*, *offline*, or *not monitored*.

Device Name Displays the name or identifier of the device.

IP Displays the IP address of the device.

Firmware Version Displays the version number of the firmware installed in the device.

Wireless Mode Displays the operating mode of the device's radio interface: *Station* or *Access Point*.

SSID Displays the name of the wireless network to which the device belongs. The wireless network name depends upon the device's wireless mode:

- *Station* mode: This displays the SSID of the AP the device is associated with.
- *Access Point* mode: This displays the SSID configured on the device.

Signal Strength Displays the received wireless signal level (client-side) for the specified interface using the specified averaging period. The antenna of the wireless client has to be adjusted to get the maximum signal strength. *Signal Strength* is measured in dBm (decibels referenced to 1 milliwatt). The conversion is defined as:

$$P(\text{dBm}) = 10 \cdot \log_{10}(P(\text{mW}) / 1\,\text{mW})$$

where P(dBm) is the power in decibel-milliwatts

So, 0 dBm would be 1 mW and -72 dBm would be 0.0000006 mW. A signal strength of -70 dBm or better (-50 to -70 dBm) is recommended for stable links.

airMAX Quality If airMAX is enabled on the device, this displays the airMAX quality level for the specified interface using the specified averaging period.

airMAX Quality (AMQ) is based on the number of retries and the quality of the physical link. If this value is low, you may have interference and need to change frequencies. If AMQ is above 80% and you do not notice any other issues, then you do not need to make any changes.

airMAX Capacity If airMAX is enabled on the device, this displays the *airMAX capacity* for the specified interface using the specified averaging period.

airMAX Capacity (AMC) is based on airtime efficiency. For example, if you have one client with a low data rate or you are using a 1x1 device (such as Bullet or airGrid) alongside other clients that are 2x2, then it will use up more airtime (slots) for the same amount of data, reducing time (or capacity) for other clients. The lower the AMC, the less efficient the AP is. If you only have one client, this may not matter, but when you have many clients (for example, more than 30), then AMC becomes very important, and you want it to be as high as possible.

If you are looking at the client, AMC shows the theoretical capacity of that client, based on current TX/RX rates and quality. AMC is a percentage based on what the maximum performance would be if the link were perfect. Clients with poor airtime efficiency can negatively affect other clients by taking up more airtime while transmitting at lower speeds. For example, client A is at MCS 12 (78 Mbps) because of low signal. The client could theoretically do MCS 15 (130 Mbps), so AMC is based on the ratio of current rate/maximum rate (78 Mbps divided by 130 Mbps), which is 60%. In a similar fashion, a 1x1 device will always have a maximum AMC of 50%, because it provides half the performance of a 2x2 device.

If you are looking at the AP, then AMQ and AMC are averages of all clients' values. If you want to discover what is lowering your values on heavily populated APs, single out the weak clients. For each weak client, try to upgrade to a higher-gain antenna (to allow a better data rate), or if the device is a 1x1 device, upgrade to a 2x2 device.

CCQ Displays the wireless Client Connection Quality (CCQ) value. The CCQ is expressed a percentage where 100% corresponds to a perfect link state.

Frequency Displays the device's operating frequency.

Uptime Displays the total time that the device has been running since the last reboot (when the device was powered up) or software upgrade. The time displayed is in days, hours, minutes, and seconds.

Connection Time Displays the total time that the device has been online. The time displayed is in days, hours, minutes, and seconds.

MAC Displays the device's MAC address.

Product Displays the product name of the device.

Last Contact Displays the time elapsed since the last contact with the device, in hours, minutes, and seconds.

Topology Node Type Displays the device's topology node type. Values are *Basic* and *Gateway*.

Device Added Time Indicates when the device was added to the network, as the date and time. The display format is *yyyy.mm.dd hh:mm:ss*.

Description Displays a description of the device.

Current Operation Indicates the currently running operation on the device; for example, "Reconnecting" or "Uploading firmware...".

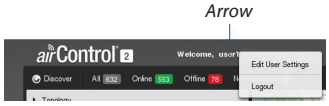
Editing the Device List

You can customize the device list display, including:

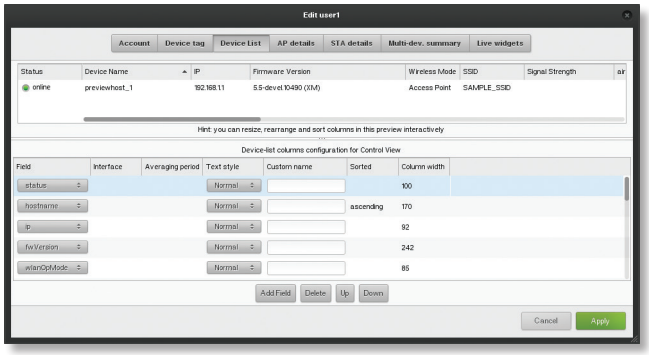
- Which fields are displayed (add/delete fields)
- The column heading
- The width of each field's column
- The format (normal or bold) of displayed field values

To customize the device list:

1. Click the arrow next to *Welcome <username>*.



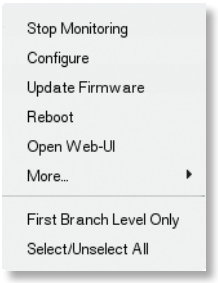
2. Click **Edit User Settings** to open the *Edit <username>* dialog box.
3. Click the *Device List* tab.



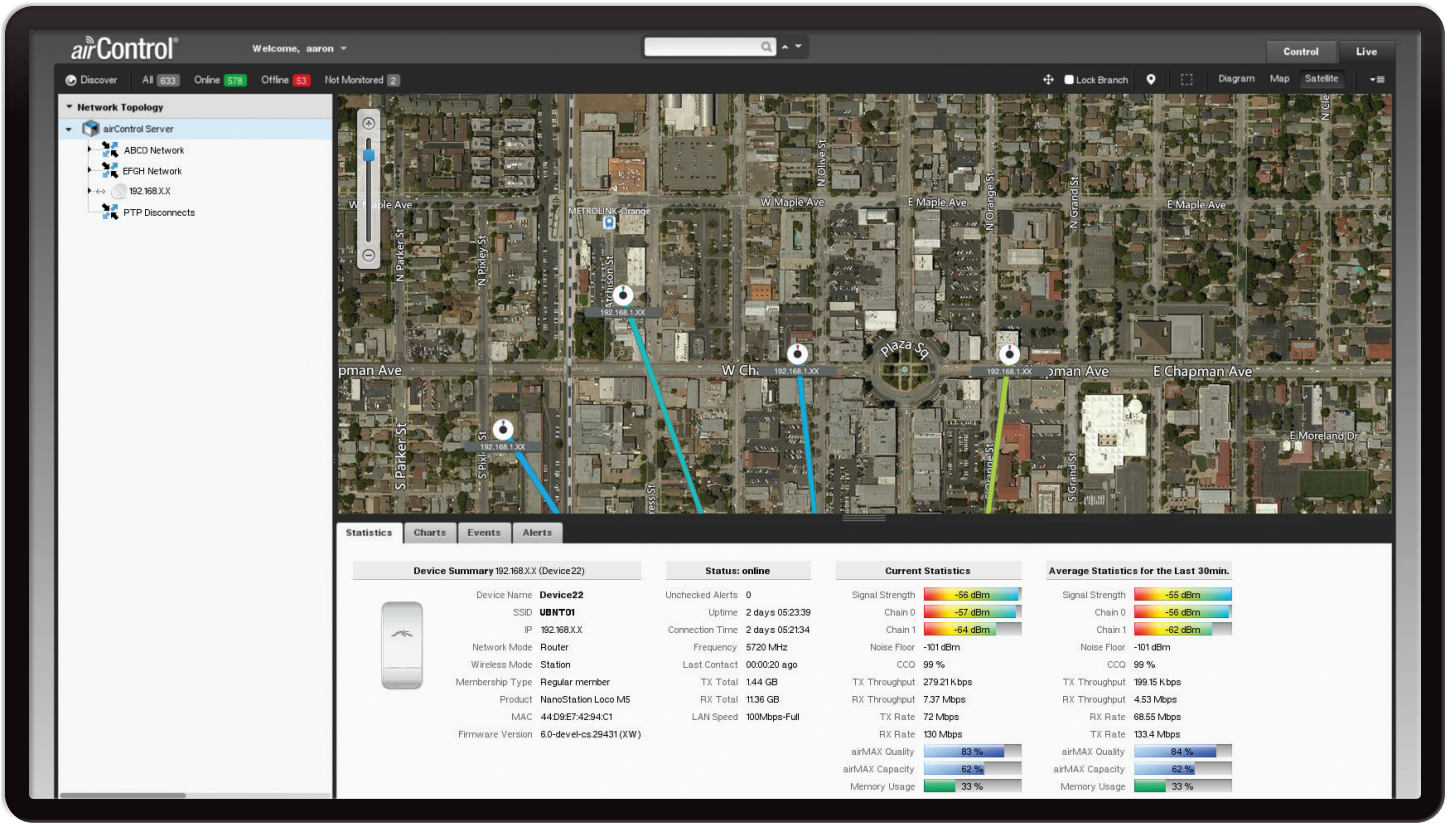
Make changes as described in **"Customizing the Device List" on page 9**.

Context Menu Functions

The context menu lets you perform various useful functions on devices. To access the context menu, select the device(s) in the *Device List* and then right-click:



For detailed information on the context menu options, refer to the appropriate section in **"Context Menu" on page 35**:



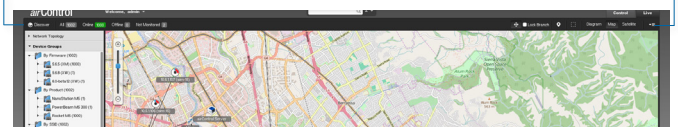
Chapter 5: Live Tab

The *Live* tab provides the *Live View* panel – a real-time view of your network's topology, with important information such as device signal strength and connection type represented visually as well as numerically. The visual representation allows quick assessment of network status at a glance. The background can be a map or satellite image of the area, or a network diagram.

Menu Bar

The menu bar, located at the top of the window, provides various options and controls for the *Live View* panel.

Menu Bar *Menu Bar*



The left side of the menu bar contains the following options:

Discover Click this option to discover devices. For full information, see **"Device Discovery" on page 30**.

All Click this option to display all network devices in the *Live View* panel.

Online Click this option to display only online devices in the *Live View* panel.

Offline Click this option to display only offline devices in the *Live View* panel.

Not Monitored Click this option to display only unmonitored devices in the *Live View* panel.

The right side of the menu bar contains the following options:

Move This option toggles between panning the diagram and relocating devices (moving a device selection to a new location on the map or grid). To move a device:

1. Select the device(s) to be moved in the *Live View* panel.
2. Click the icon.
3. Move the device to the new location.
4. Click the icon again.

Note: To move multiple devices with a single operation, select all of the devices. They will move to the new location as a group.

Lock Branch Click this option to lock all subnodes of the selected device. Then, when you move the selected device, all of its subnodes will be moved as well. (If you do not select this option, only the selected node will be moved, while its subnodes remain in place.)

Multiple Selection Use this option to select multiple devices in close proximity to each other:

1. Click the icon.
2. Drag a rectangle around the devices to be selected.

Diagram Click this option to change the view to a network diagram, which is a logical representation of the network (as compared to the *Map* and *Satellite* options which are physical representations of the network).

Map Click this option to change the background to a map of the area shown in the *Live View*, with each device's location determined by its coordinates.

Satellite Click this option to change the background to a satellite image of the area shown in the *Live View*, with each device's location determined by its coordinates.

Options menu Click the icon to display the *Live View* options menu. For detailed information on this menu, refer to **"Live View Options Menu" on page 18**.

Live View Options Menu

The *Live View* options menu provides the following options:

Show Device Labels This option, enabled by default, is used to display a label next to each device.

Note: The device label is configured on the *Device Tag* tab of the *Edit User* dialog. For more information, refer to **"Device Tag Tab" on page 8**.

Show Link Labels This option, enabled by default, is used to display a label next to each link, with the following information:

- *Signal* level
- *Noise* level
- *Data Rate* (both TX and RX)
- *Throughput* (both TX and RX)

Import Device Coordinates Select this option to import a device's coordinates from a KML (Keyhole Markup Language) file. This feature can be used to do the following:

- Import device coordinates exported from airControl v1.
- Restore device coordinates using previously exported coordinates.

In addition to the device's coordinates, the KML file must specify the device's MAC address.

To import device coordinates, follow these steps:

1. Open the *Options* menu and click **Import Device Coordinates**.
2. Navigate to the KML file, select the file, and click **Select KML File**.
3. airControl will notify you when it is finished parsing the file (or if an error occured). Click **Close**.

Export Device Coordinates Select this option to export a device's coordinates to a KML file.

Sync Location to Device(s) Select this option to save the location (latitude and longitude coordinates) of a device that does not have GPS capability after you have repositioned the device on the map in *Live* view.

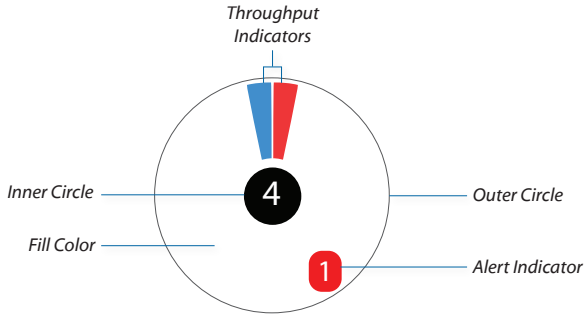
Live View Display

The *Live View* panel displays information both visually and textually. Visual elements include the following:

Network Nodes

Access Points and Stations

APs and stations are indicated by symbols, with each symbol comprised of various elements that visually convey different types of information, as follows:



Element	Description
Outer Circle	Delineates the symbol for a network device. Highlighted in blue if the device is selected.
Fill Color	The outer circle's fill color indicates the device status: - White: Device is online - Dark red: Device is offline - Gray: Device is not monitored
Inner Circle	Color: Indicates the device selection status: - Black: Device is not selected - Blue: Device is selected (selected device also has a blue highlight around the outer circle) Number (Available on APs only): The number of stations connected to the AP
Throughput Indicators	The red and blue arcs indicate the TX and RX throughput as percentages (where 100% is 60 Mbps; the wider the arc, the higher the percentage). - Red: Transmit throughput - Blue: Receive throughput Indicators are shown only for monitored devices.
Alert Indicator	The number inidicates the total number of alerts for the device. (Displayed only if device has at least one alert)

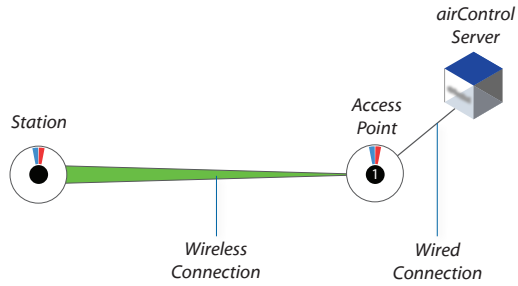
Other Nodes

Additional network icons include the following:

Element	Description
	This icon represents the airControl server.
	This icon indicates a manually added network router.
	This icon indicates the unplaced devices folder.

Links

Links are indicated by lines between the network nodes. The following example shows the airControl server connected to an AP, which is connected to a station:



The color and shape of each line indicate the following:

Type of Line	Description
Thick, tapered line	This type of line indicates a wireless connection. The color indicates the following: - Red to blue[1]: Lowest to highest level signal - Dark red: Offline link - Gray: Link to unmonitored device
Thin, black line	This type of line indicates a wired (Ethernet) connection.

[1] A continuous range of colors, analagous to the spectrum; i.e. red, orange, yellow, green, blue.

Display Controls

Display controls include the following:

Element	Description
 Zoom control	Drag the slider or click + or – to change the zoom level.
 Full Screen toggle	Click to toggle the *Live View* panel to full-screen display or back to its default size.

Selecting Devices

To select a single device, click the device in the *Live View* panel. The icon changes as follows to indicate that it is selected:

- AP or station icon: The icon's inner circle changes to blue and the outer circle is highlighted in bright blue

- All other icons: The background fill changes to blue:

To unselect a device, click an empty spot in the *Live View* panel. (Clicking the device again does not unselect it.)

Multiple devices are selected as follows:

- To quickly select devices located close to each other, use the *Multiple Selection* tool as described in **"Menu Bar" on page 17**.
- To select devices not in close proximity to each other, hold the **Shift** key and click each device one at a time.

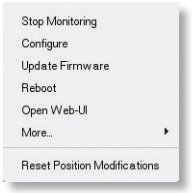
When multiple devices are selected, you can edit the selection (add devices to or remove devices from the selection) as follows:

- To add another device to the selection, hold the **Shift** key and click the device.
- To remove (unselect) a device from the selection, hold the **Shift** key and click the device.

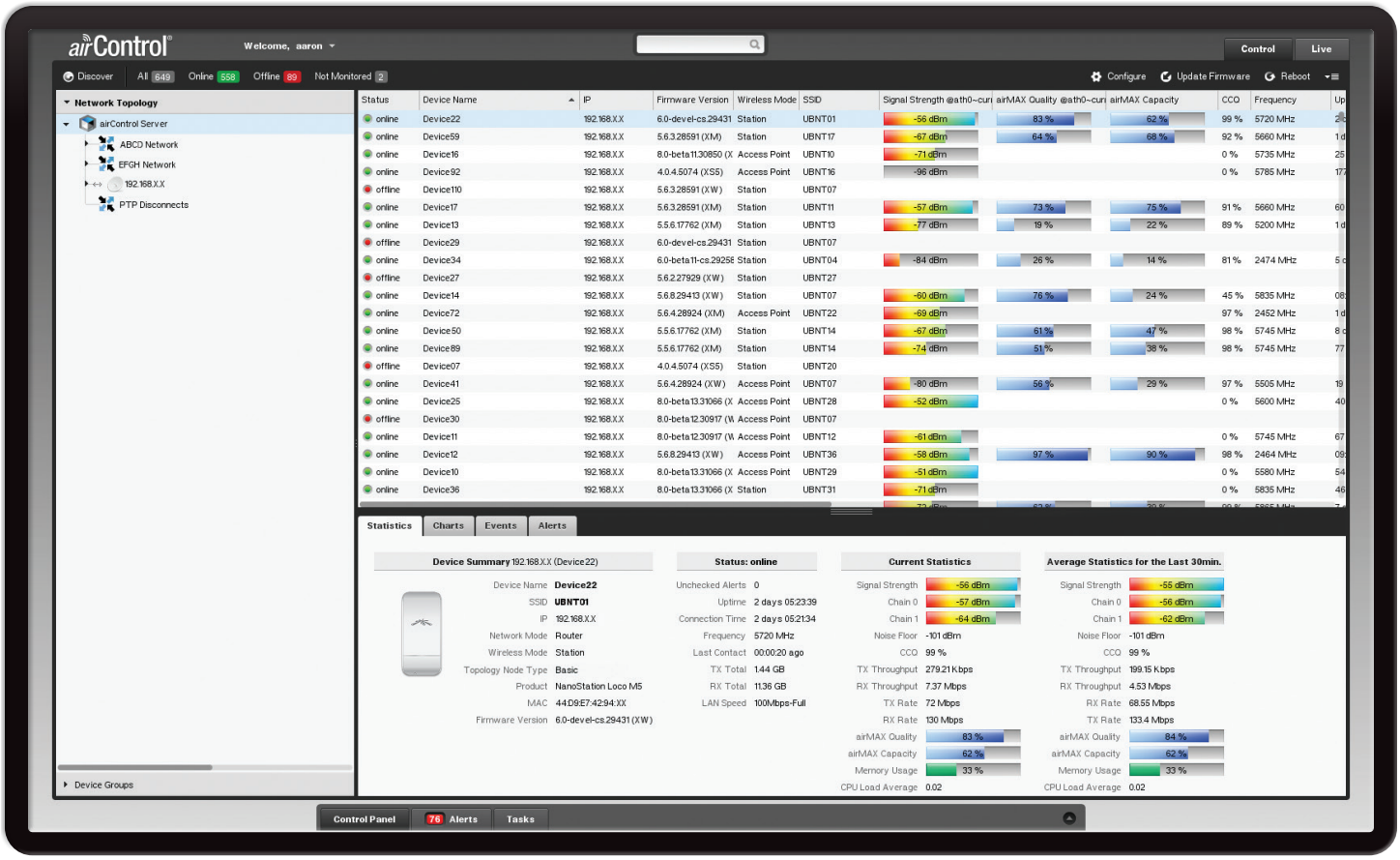
Note: When selecting a large number of devices, it may be easier to use the *Device List* on the *Control* tab. For example, to select all devices with the same SSID, you can sort the list by SSID.

Context Menu Functions

The context menu lets you use *Live View* to perform various useful functions on a device. To access the context menu, select the device(s) and then right-click:



For detailed information on the context menu options, refer to the appropriate section in **"Context Menu" on page 35**:



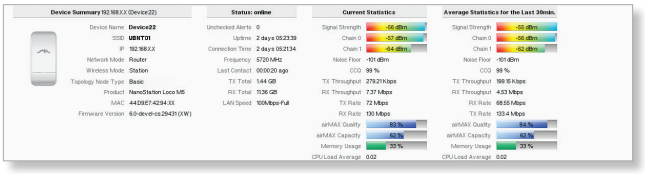
Chapter 6: Device Details

The *Device Details* pane, located in the lower right portion of the window, contains the following tabs:

- **Statistics** This tab displays statistical information for the currently selected device(s).
- **Charts** This tab displays charts of real-time information
- **Events** This tab displays a list of events, as well as the chart displayed by the *Charts* tab
- **Alerts** This tab displays alerts for the selected device(s)

Statistics

The *Statistics* tab displays statistical information for the selected device(s). (To select multiple devices, hold the **Ctrl** key and select devices from the *Device List* or *List View*.)



If a single device is selected, the following are displayed:

- *Device Summary*
- *Status*
- *Current Statistics* (only for online devices)
- *Average Statistics for the Last 30 min*. (online devices only)

If multiple devices are selected, the following are displayed:

- *Traffic*
- *State Averages*

If a single device with status *not monitored* is selected, then only the *Device Summary* section is displayed.

Device Summary

The *Device Summary* section contains the following information:

Device Summary The section heading displays the device's IP address and SSID.

Device Name Displays the device's name (also referred to as the hostname).

SSID Displays the Service Set Identified (SSID) for the wireless network to which the device belongs.

IP Displays the ID address of the device.

Network Mode Displays the network mode of the device.

Wireless Mode Displays the wireless operating mode of the device.

Topology Node Type Displays the device's topology node type: *Basic* or *Gateway*.

Product Displays the device's product name.

MAC Displays the device's MAC address

Firmware Version Displays the version number of the firmware that is installed in the device.

Status

The *Status* section displays the following information:

Status The section heading displays the device's status (*online*, *offline*, *not monitored*).

Uptime Displays the device's total uptime.

Connection Time Displays the total uptime of the device's WLAN.

Frequency Displays the device's current operating frequency.

Last Contact Displays the time elapsed since the last contact with the device.

TX Total Displays the total number of bytes transmitted by the device.

RX Total Displays the total number of bytes received by the device.

LAN Speed Displays the LAN data rate and duplex mode.

Current Statistics

The *Current Statistics* section displays the following current statistics:

Signal Strength Displays the current signal strength.

Chain 0 Displays the current chain 0 signal level.

Chain 1 Displays the current chain 1 signal level.

Noise Floor Displays the current noise floor value.

CCQ Displays the current wireless Client Connection Quality (CCQ) value.

TX Throughput Displays the current TX throughput.

RX Throughput Displays the current RX throughput.

TX Rate Displays the current TX data rate.

RX Rate Displays the current RX data rate.

TX Modulation Rate Displays the device's TX modulation rate.

RX Modulation Rate Displays the device's RX modulation rate.

airMAX Quality If airMAX is enabled on the device, this displays the current airMAX quality level.

airMAX Capacity If airMAX is enabled on the device, this displays the current airMAX capacity level.

Memory Usage Displays the current percentage of memory usage.

CPU Load Average Displays the current CPU load value.

Average Statistics for the Last 30 Min.

The *Average Statistics for the Last 30 Min.* section displays the following information, where each statistic is the average value for the previous 30 minutes:

Signal Strength Displays the average signal strength.

Chain 0 Displays the average chain 0 signal level.

Chain 1 Displays the average chain 1 signal level.

Noise Floor Displays the average noise floor value.

CCQ Displays the average wireless Client Connection Quality (CCQ) value.

TX Throughput Displays the average TX throughput.

RX Throughput Displays the average TX throughput.

TX Rate Displays the average TX data rate.

RX Rate Displays the average RX data rate.

airMAX Quality If airMAX is enabled on the device, this displays the average airMAX quality level.

airMAX Capacity If airMAX is enabled on the device, this displays the average airMAX capacity level.

Memory Usage Displays the average percentage of memory usage.

CPU Load Average Displays the average CPU load value.

Traffic

The *Traffic* section displays the following statistics:

Note: Each statistic is either summed or averaged, as configured on the *Multiple Selection Details* tab of the *User Settings* (see **"AP Details, STA Details, and Multiple Selection Details Tabs" on page 10**).

TX Throughput Displays the TX throughput for the selected devices.

RX Throughput Displays the RX throughput for the selected devices.

TX Total Displays the number of bytes transmitted by the selected devices.

RX Total Displays the number of bytes received by the selected devices.

State Averages

The *State Averages* section displays the following statistics:

Note: Each statistic is either summed or averaged, as configured on the *Multiple Selection Details* tab of the *User Settings* (see **"AP Details, STA Details, and Multiple Selection Details Tabs" on page 10**).

Signal Strength Displays the signal strength for the selected devices.

Uptime Displays the uptime for the selected devices.

CQQ Displays the wireless Client Connection Quality (CCQ) value for the selected devices.

Charts

The *Charts* tab displays collected statistics (historical data) using charts. The *Charts* tab also lets you create your own custom charts, as described in**"Modifying the Chart Display" on page 23**. To display a chart:

1. Click the *Chart* tab,
2. Click the ▾≡ icon at the far right to display the drop-down options menu.
3. Select the desired chart from the menu.

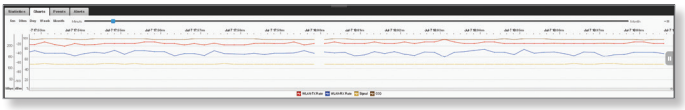
The options menu of the *Charts* tab provides the following charts by default:

WLAN TX/RX Throughput This chart displays a plot of the WLAN TX and RX Throughput.

Free Memory, CPU Load This chart displays a plot of the amount of available memory plus the CPU load.

WLAN TX/RX Throughput, Signal, airMAX This chart displays a plot of the WLAN TX/RX throughput, the signal level, and the airMAX quality and capacity levels.

WLAN TX/RX Rate, Signal, CCQ This chart displays a plot of the WLAN TX/RXrate, the signal level, and the Client Connection Quality (CCQ) value.



Number of Clients This chart displays a plot of the number of clients connected to the selected device.

You can also add, remove, and edit charts using the *Control Panel* (refer to **"Control Panel" on page 25**).

Modifying the Chart Display

You can adjust the time scale by dragging the slider control along the upper edge of the chart. You can also click the following shortcuts to quickly set the time scale to a set interval:

- **5m** Click this to display the data for the last 5 minutes.
- **10m** Click this to display the data for the last 10 minutes.
- **Day** Click this to display the data for the last day.
- **Week** Click this to display the data for the last week.
- **Month** Click this to display the data for the last month.

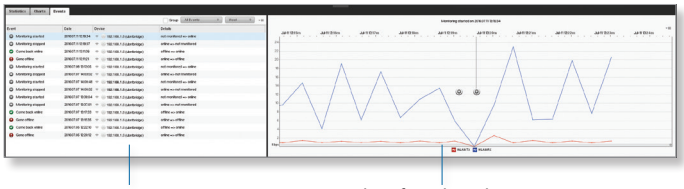
The options menu (accessed by clicking the ▾☰ icon at the far-right edge of the chart area) lets you control a chart's appearance in the following ways:

- **Show Legends** Click this option to toggle the legend display. This is selected by default.
- **Show Device Events** Click this option to toggle the display of device events. This is selected by default.

  Note: Events on charts are indicated by icons. For a detailed list of these icons, refer to **"Event Icons" on page 24**.
- **Maximize Plot Area** Click this to maximize the chart to fill the entire window, as shown below. To return to the original display, click **Close**.

Events

The *Events* tab displays a list of events for the selected device(s). You can apply various filters to narrow the list of events. In addition to the list of events on the left, additional information related the event is displayed on the right. The following is an example of a chart that shows when the event occurred:



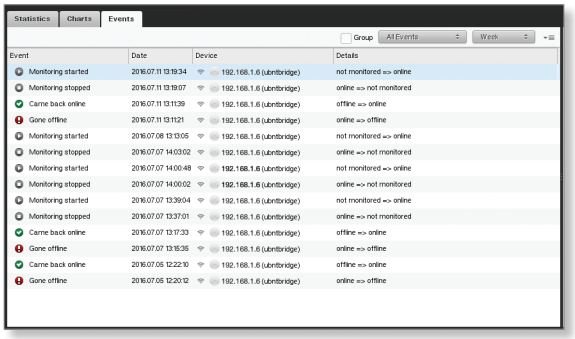
The following options are provided along the top of the *Events* tab:

Group Enable this option to organize the events by date, with folders named *yyyy.mm.dd* (*n*) (where *yyyy.mm.dd* is the date and *n* is the number of events for that date). Click a folder to display its associated events. Disable this option to change the list back to a straight list sorted by date.

All Events Click this drop-down list to filter the *Event List* by type of event. The choices are: *All Events* (default), *Configurations*, *Status Changes*, *Firmware Updates*, *Reboots*, and *Alerts*.

Week Click this drop-down list to select the time period to display events for. The choices are: *Today*, *Week* (default), *Month*, and *3 Months*.

The *Event List* is formatted as follows:



Event Displays a brief description of the event.

Date Displays the date and time when the event occurred.

Device Displays the device associated with the event.

Details Displays additional details on the event.

Event Icons

The following icons are used to identify events in the *Event List* and in charts (*Device* refers to either an AP or station):

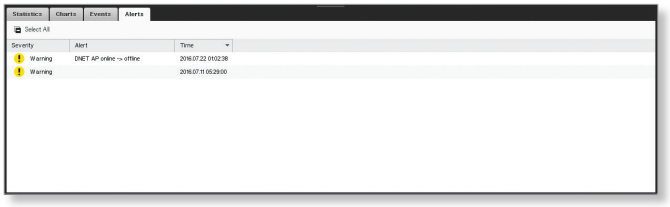
Icon	Event	Status Change or Description
	Device connected	Offline > Heartbeating
	Device offline	Heartbeating > Offline
	Device discovered	Ignored > Discovered New > Discovered Removed > Discovered
	Device rebooted	
	Monitoring started	Discovered > Heartbeating
	Monitoring stopped	Heartbeating > Discovered Offline > Discovered
	Firmware updated	
	Backup	Initial download of configuration
	Configuration	Configuration changed
	Default	All other events

Alerts

The *Alerts* tab displays a list of alerts for the selected device(s). (To select multiple devices, hold the **Ctrl** key while selecting devices from the *Device List* or *List View*.)

Alerts are generated by Automation Rules (efer to **"Automation Rules" on page 31**). The only action for an alert is Acknowledge. Alerts require you to take corrective action. They have the following severity levels (from lowest to highest):

- Information
- Warning
- Critical



Severity Displays the severity level of the alert.

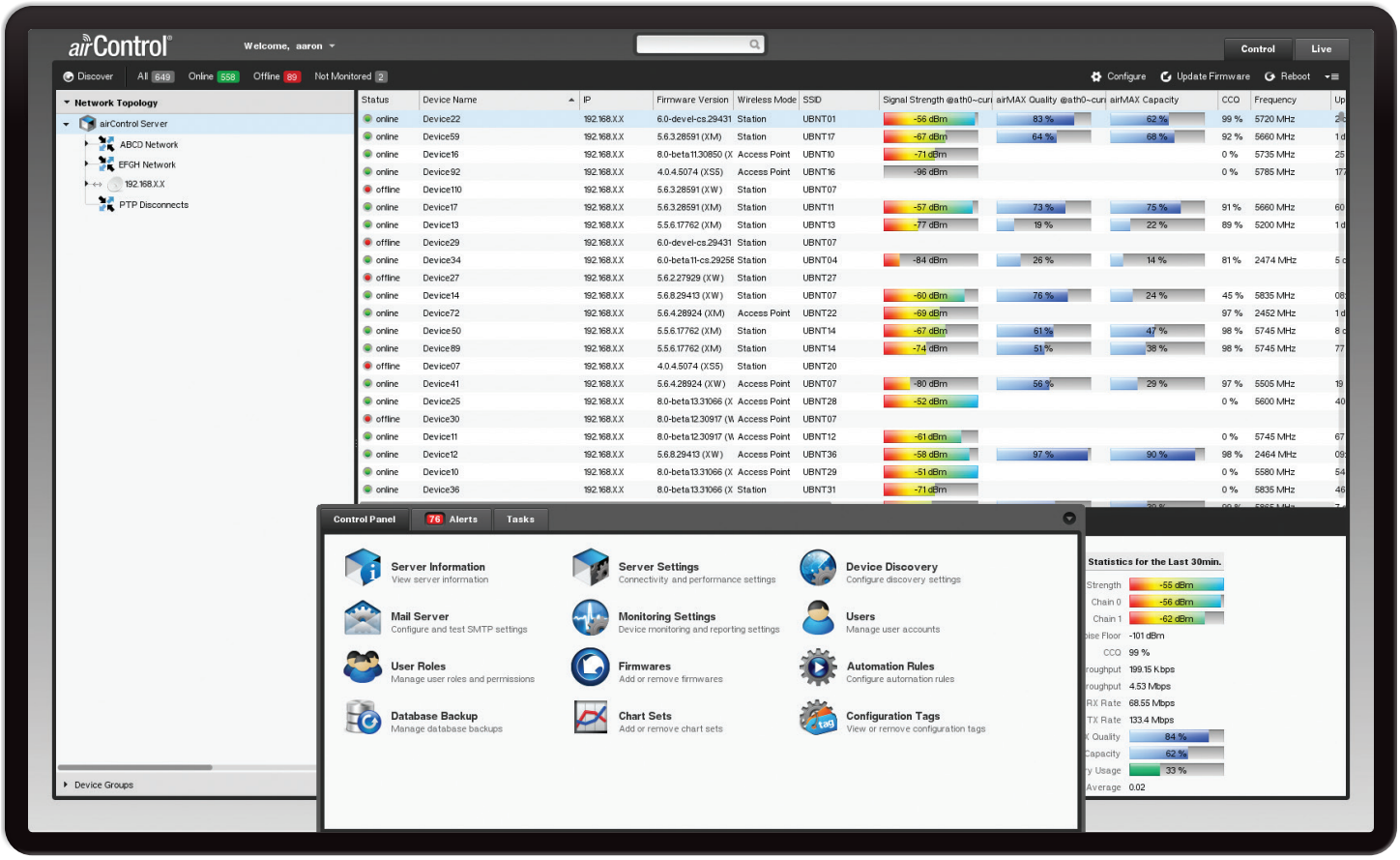
Alert Displays a description of the alert.

Time Displays the date and time the alert was generated.

Alert Icons

The following icons are used to identify events in the list of alerts:

Icon	Description
	Informational alert
	Warning alert
	Critical alert

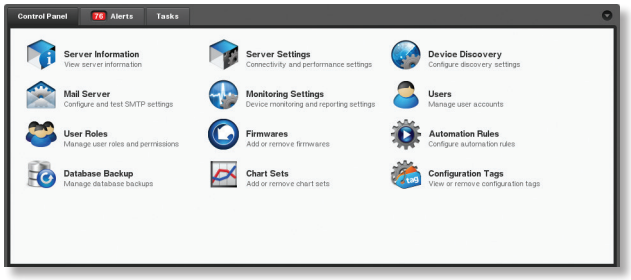


Chapter 7: Application Drawer

The *Application Drawer*, located at the bottom of the airControl window, contains three tabs:

- **Control Panel** This tab is used to configure various settings and features of airControl
- **Alerts** This tab displays a list of all alerts throughout your network
- **Tasks** This tab displays scheduled tasks that are pending, running, or finished.

Control Panel



The *Control Panel* tab contains the following options:

Server Information See **"Server Information" on page 26** for details.

Mail Server See **"Mail Server" on page 26** for details.

User Roles See **"User Roles" on page 26** for details.

Database Backup See **"Database Backup" on page 28** for details.

Server Settings See **"Server Settings" on page 28** for details.

Monitoring Settings See **"Stored Device Access Credentials" on page 28** for details.

Firmwares See **"Firmwares" on page 29** for details.

Chart Sets See **"Chart Sets" on page 29** for details.

Device Discovery See **"Device Discovery" on page 30** for details.

Users See **"Users" on page 30** for details.

Automation Rules See **"Automation Rules" on page 31** for details.

Configuration Tags See **"Configuration Tags" on page 33** for details.

After selecting any of the above options, click **Back** to close the dialog and return to the *Control Panel*.

Server Information

This option displays version information for the server software.

Server Version Displays the version number of the airControl server software.

Server Uptime

Database Version

Database Schema Version

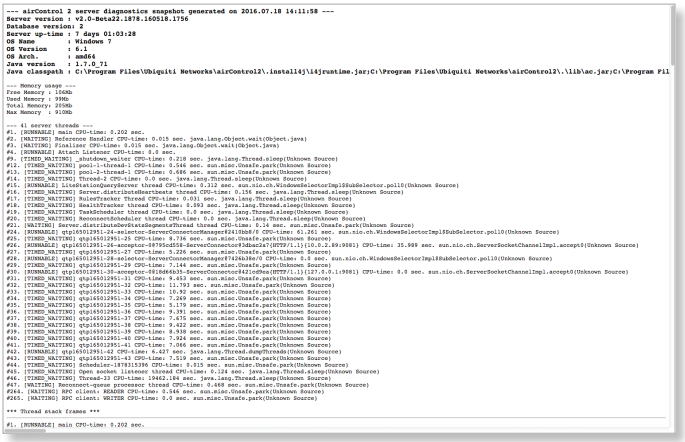
OS Name

OS Version

JRE Version

JRE Architecture

Server Diagnostics Page Click **Open in Browser** to see server diagnostics. The diagnostics will be displayed in your web browser, as shown below:



Mail Server

This option displays information on the airControl mail server.

SMTP Server Settings

This section contains the basic SMTP settings:

Server Address Specifies the address of the SMTP server.

Server Port Specifies the SMTP server's port number.

Authentication Type Specifies the type of authentication to use for mail: *None*, *Plain*, *SSL*, or *TSL*.

Username Enter the SMTP account username.

Password Enter the SMTP account password.

Test SMTP Settings

This section contains settings used for SMTP testing:

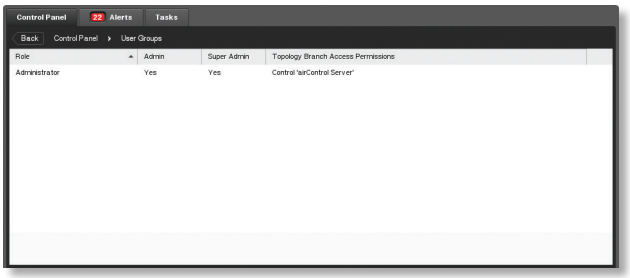
Sender Address Specifies the email address of the test sender.

Recipient Address Specifies the address to use for the test recipient.

Test Email Click **Send** to send a test email to the *To Email* recipient address.

User Roles

The *User Roles* option, used to configure the roles that you assign to users (see **"Users" on page 30** for details on managing user accounts), displays the following dialog:



The dialog contains a list of roles with the following fields:

Role This is the name of the role.

Admin Indicates whether the role allows the user to manage users: *Yes* or *No*.

Super Admin Indicates whether the role allows the user to manage the airControl server: *Yes* or *No*.

Topology Branch Access Permissions Displays the permissions that have been defined for this role. Examples: *Control airControl Server*, *Monitor <device>*.

The buttons at the bottom of the dialog include:

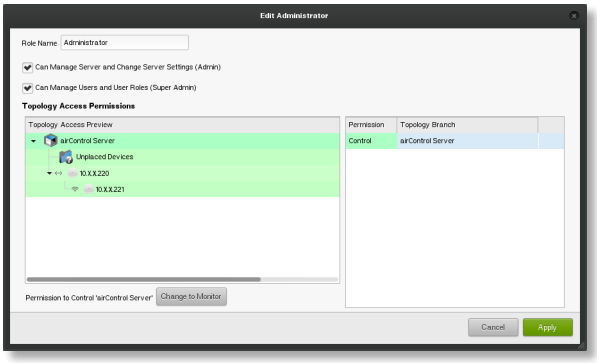
View Click this button to view the selected role's details.

Edit Click this button to edit the selected user role.

Add Click this button to add a new user role.

Remove Click this button to delete an existing user role.

When you click any of these buttons, a dialog similar to the following appears:



Note: When the *View* option is selected, the above dialog is read-only.

Role Name The name of the user role.

Can Manage Server and Change Server Settings (Admin) Select this option to allow users with this role to manage the airControl server and change its settings.

Can Manage Users and User Roles (Super Admin) Select this option to allow users with this role to manage users and user roles.

Tolopogy Access Permissions This part of the dialog displays the permissions and is used to edit them:

- **Topology Access Preview** This visual depiction of your network topology is where you make device selections. The background color indicates the permission type: green for *Control* and blue for *Monitor*.
- **Permission** Specifies a specific permission assigned to the user role for the specified *Topology Branch*. Valid permission values are *Control* or *Monitor*.
- **Topology Branch** Specifies the device(s) to which the permission applies, defined as a branch of the topology tree (specific device and any subnode devices).
- **Permission to Control/Monitor** *<Topology Branch>* This allows you to modify an existing permission or add a new one for the selected *Topology Access Preview* device.
  - To add a new a permission, select **Control** or **Monitor** from the drop-down box and click **Add**.
  - To modify an existing permission, click **Change to Monitor** or **Change to Control** (whichever applies). The color of the *Topology Access Preview* will change accordingly.

View

To view the read-only details of an existing user role:

1. Click **View**.
2. The *<Role Name>* dialog appears.
3. Click **Close** when finished viewing the role.

Edit

To modify the details of an existing user role:

1. Click **Edit** to display the *Edit <Role Name>* dialog.
2. Make changes as follows:
   - Set the following options for the user role, as needed:
     - **Can Configure Users** If enabled, the user is allowed to manage other users.
     - **Can Configure Server** If enabled, the user is allowed to configure the airControl server.
   - To edit a permission, select it from the right side of the dialog. You can make the following changes:
     - airControl server-related permission: Click **Change to Control** or **Change to Monitor** as applicable. The background color of the *Topology Access Preview* will change accordingly.
     - Device-related permission: Click **Remove** to delete the permission from the list.
   - To add a new permission:
     a. Select the affected device(s) from the *Topology Access Preview*.
     b. The new permission is displayed below the *Topology Access Preview*. Select **Monitor** or **Control** and click **Add**.
     c. The new permission will be displayed on the right side of the dialog.
3. Click **Close** when finished making changes to the role.

Add

To add (create) a new user role:

1. Click **Add**.
2. The *Add New User Role* dialog appears with blank fields.
3. Enter the *Role Name*.
4. Select the options that apply to this new user role:
   - **Can Manage Server and Change Server Settings (Admin)** If enabled, the user is allowed to manage the airControl server and change its settings.
   - **Can Manage Users and User Roles** If enabled, the user is allowed to manage users and their roles.
5. To add a new permission:
   a. Select the affected device(s) from the *Topology Access Preview*.
   b. The new permission is displayed below the *Topology Access Preview*. Select **Monitor** or **Control** and then click **Add**.
   c. The new permission is displayed on the right side of the dialog.
6. Click **Close** when finished defining the new role.

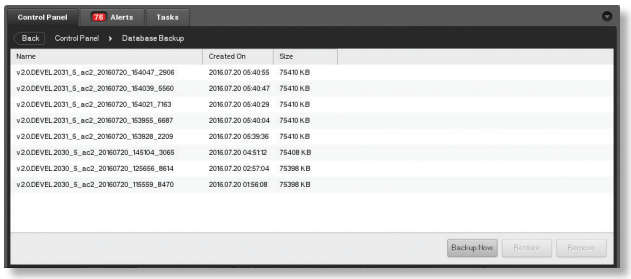
Remove

To remove an existing user role:

1. Select the user role from the list.
2. Click **Remove**.
3. Click **Yes** when prompted to confirm the deletion.

Database Backup

The *Database Backup* option, used to back up the SQL database, displays the following dialog:



IMPORTANT: The *Database Backup* option does not back up statistical information. To back up all of your data, you must manually back up the PostgreSQL database using the pg_dump tool.

The dialog contains a list of database backups:

Name Displays the name of the backup.

Created On Displays the date of the backup.

Size Displays the size of the backup.

The bottom of the dialog contains the following buttons:

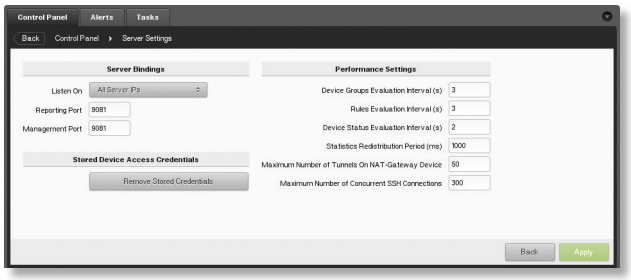
Backup Now Click this button to begin a new backup.

Restore Click this button to restore the selected backup.

Remove Click this button to delete the selected backup.

Server Settings

The *Server Settings* option is used to display and modify server-related settings:



To modify a setting, select or enter the new value. Click **Apply** to apply the change.

Click **Back** when finished viewing or making changes to the settings.

Server Bindings

Listen On This option allows you to run the server on one or more specific IP addresses, to restrict access as a security measure. To do so, select **Specified IPs** and enter the IP address(es); otherwise, keep the default, *All Server IPs*.

Reporting Port The port to which devices will report (heartbeat).

Management Port The port to which clients will be able to connect.

Performance Settings

Device Group Evaluation Interval Displays how often device groups are refreshed in seconds.

Rule Evaluation interval Sets how often automation rules are evaluated in seconds.

Device Status Evaluation Interval Sets the device status evaluation interval in seconds.

Statistic Redistribution Period Sets the statistic redistribution period in ms.

Maximum Number of Tunnels On NAT-Gateway Device Sets the maximum number of tunnels on NAT gateway devices.

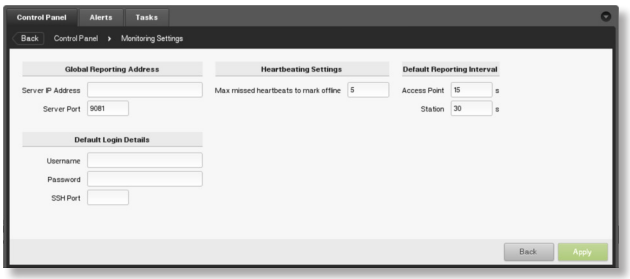
Maximum Number of Concurrent SSH Connections Sets the maximum number of concurrent SSH connections. This number limits the number of network tasks that can be performed in parallel. Lower it to 50 if your server is low on resources and seems to be struggling.

Stored Device Access Credentials

Stored Credentials Click **Remove** to delete stored credentials. This might be useful if you want to regenerate the keys that are used to manage the device. airControl connects to the device using keys that are generated when monitoring is started.

Monitoring Settings

The *Monitoring Settings* option is used to display and modify the settings for device monitoring (these settings take effect when device monitoring is started):



To modify a setting, select or enter the new value. Click **Apply** to apply the change.

Click **Back** when finished viewing or editing the settings.

Global Reporting Address

Server's IP Address Displays the monitoring server's IP address.

Server's Port Displays the server's port number to be used for reporting.

Heartbeating Settings

Max Missed Heartbeats to Mark "Offline" Displays the maximum number of missed heartbeats to mark offline.

Default Reporting Interval

Access Point(s) Displays the default reporting interval for access points in seconds.

Station(s) Displays the default reporting interval for stations in seconds.

Default Login Details

The *Default Login Details* option is used to provide airControl with default login credentials for newly discovered devices. (If login fails using the default credentials, airControl will prompt for valid credentials.)

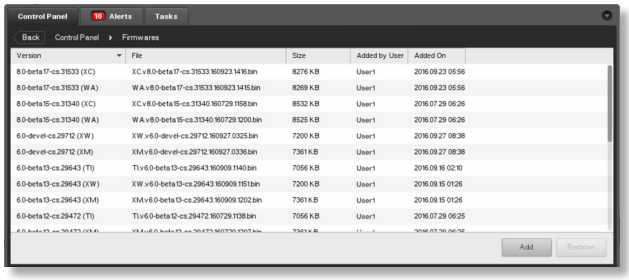
Username The username for the default login.

Password The password for the default login.

SSH Port The SSH port used for the default login.

Firmwares

Use the *Firmwares* option to display and modify your list of available firmware versions for device upgrades:



To add a new firmware version to the list, click **Add**, navigate to the file, and click **Select firmware image files**. To delete a firmware, select the firmware from the list, click **Remove**, and then click **Yes** to confirm the deletion.

Click **Back** when finished viewing or editing the list.

Version The version number of the firmware.

File The name of the firmware file.

Size The size of the firmware file.

Added by User The username of the user who added the firmware version to the list.

Added On The date and time when the firmware version was added.

Chart Sets

Use the *Chart Sets* option to configure the charts displayed by the *Charts* tab of the *Device Details* panel.

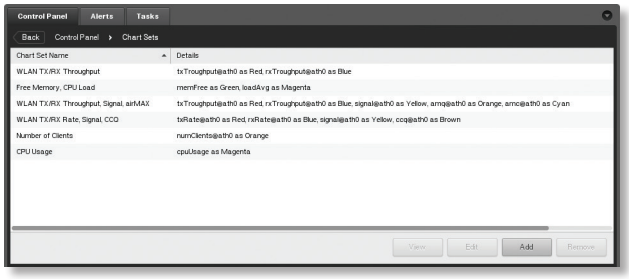


Chart Set Name Displays the name of the chart.

Details Describes the data that is plotted on the chart.

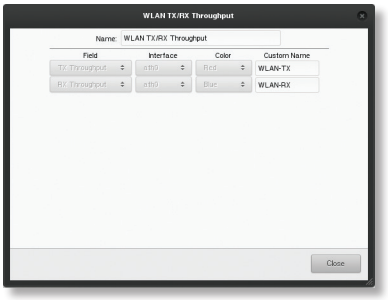
The buttons at the bottom of the dialog include:

Edit Click this button to edit the selected chart.

Add Click this button to add a new chart.

Remove Click this button to delete an existing chart.

When you click any of these buttons, a dialog similar to the following appears:



Name Name of the chart.

Field The field to be plotted (refer to **"Device Fields" on page 45** for a list of the fields you can select).

Interface The applicable interface for the selected field. (Not available for all fields.)

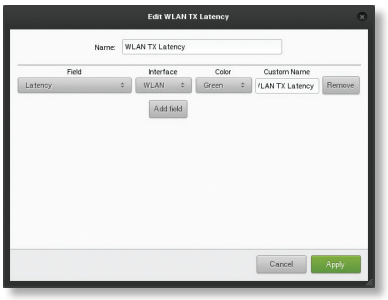
Color The color to use for the data plot on the chart.

Custom Name A custom name (to display a different name than the default field name on the chart).

Edit

To modify the details of an existing chart:

1. Click **Edit** to display the *Edit <chart name>* dialog.

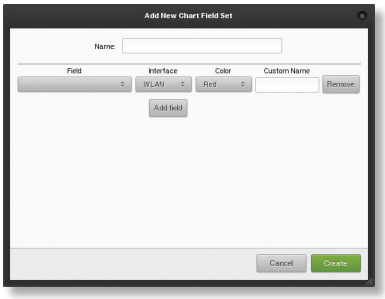


2. Make changes as needed:
   - **Field** Select the field to be plotted.
   - **Interface** If the selected *Field* requires an applicable interface, select the interface.
   - **Color** Select the color to associate with the plot.
   - **Custom Name** Enter a custom name, if desired.
   - To add a new field (data plot) to the chart:
     a. Click *Add Field*.
     b. Configure the *Field*, *Interface* (if applicable), *Color*, and *Custom Name* as needed.
     c. Click **Apply** to save and apply the changes.
   - To delete a field (data plot) from the chart, click **Remove** at the far right side of the field.
3. Click **Close** when finished editing the chart.

Add

To add (create) a new chart:

1. Click **Add**.
2. The *Add New Charted Fields Set* dialog appears.



3. Enter a *Name* for the new chart.
4. For each type of data to be plotted on the chart:
   a. Configure the *Field*, *Interface* (if applicable), *Color*, and *Custom Name* as needed.
   b. Click **Add field** to add another row to the table and define a new field (data plot).
5. Click **Create** when finished defining the new chart.

Remove

To remove an existing chart:

1. Select the chart from the *Chart Sets* list.
2. Click **Remove**.
3. Click **Yes** when prompted to confirm the deletion.

Device Discovery

The *Device Discovery* option is used to configure device discovery (which is accessed from the menu bar; see for details on device discovery).

Broadcast Discovery Duration Displays the broadcast discovery duration in seconds.

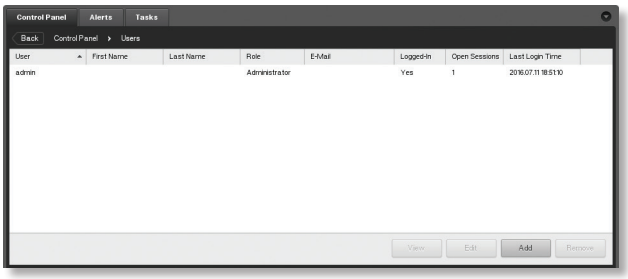
IP Range Scan Batch Size Displays the IP range scan batch size.

IP Range Scan Batch Time(s) Displays the IP range scan batch time in seconds.

IP Range Scan Retry Count Displays the number of times to retry scanning.

Users

The *Users* option is used to manage user accounts.



User Displays the user name for the user account.

First Name Displays the user's first name.

Last Name Displays the user's last name.

Role Displays the user's role.

E-Mail Displays the user's e-mail address.

Logged-In Displays *Yes* if the user is logged in, or *No* if the user is not logged in.

Open Sessions Displays the number of sessions the user currently has open.

Last Login Time Displays the date and time of the user's most recent login.

The buttons at the bottom of the dialog include:

View Click this button to view the user account's details.

Edit Click this button to edit the selected chart.

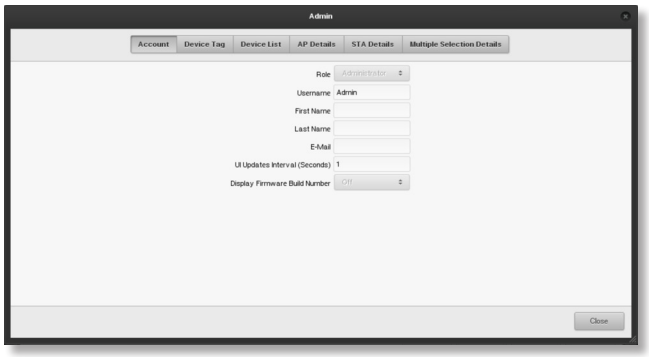
Add Click this button to add a new chart.

Remove Click this button to delete an existing chart.

View

To view a read-only window of the user account's details:

1. Select the user account and click **View**.
2. The <*account name*>dialog appears.

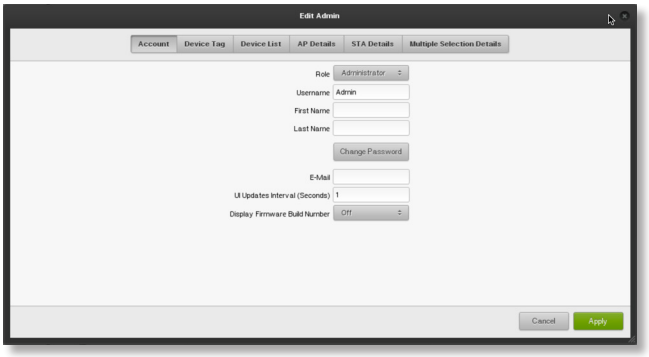


3. When finished viewing the details, click **Close**.

Edit

To modify the details of an existing user account:

1. Select the user account and click **Edit** to display the *Edit <account name>* dialog.

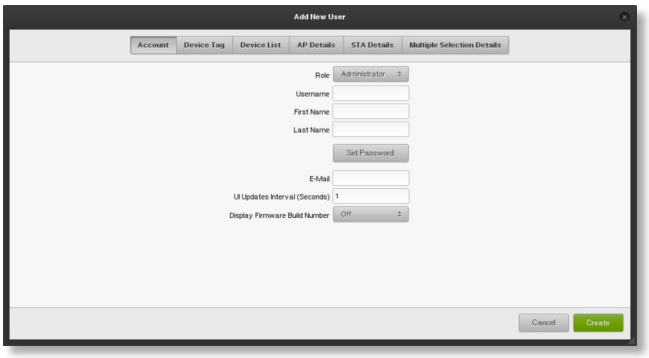


2. Update the fields as needed.
3. Click **Apply** when finished editing the user account.

Add

To add (create) a new user account:

1. Click **Add**.
2. The *Add New User* dialog appears.



3. Enter the following information:
   - **Role** Select **Administrator** (default) or a user-defined role that you have created, if any.
   - **Username, First Name, Last Name** Enter the name.
   - **Color** Select the color to associate with the plot.
   - **Custom Name** Enter a custom name, if desired.
   - **Change Password** To change the account password, click this button, enter the new password, confirm the password, and click **Change**.
   - **E-Mail** Enter the e-mail address for the account.
   - **UI Updates Interval (Seconds)** Enter the interval in seconds for UI updates.
   - **Display Firmware Build Number** Enable this option to append the build number to the firmware version property.
4. Click **Create** when finished defining the new account.

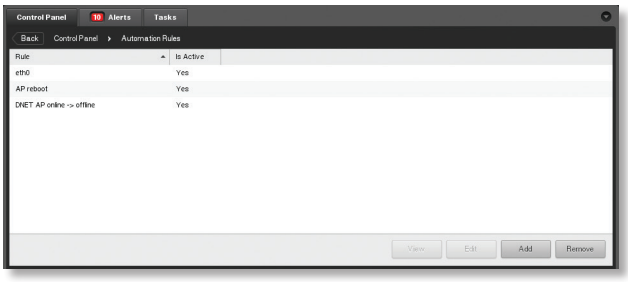
Remove

To remove an existing user account:

1. Select the user account.
2. Click **Remove**.
3. Click **Yes** when prompted to confirm the deletion.

Automation Rules

The *Automation Rules* option is used to configure the rules that trigger alerts.



Rule Displays the name of the rule.

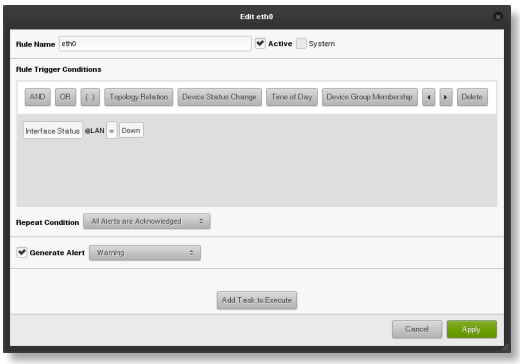
Is Active Displays *Yes* if the rule is active or *No* if the rule is not active.

View

To view the read-only details of an existing rule:

4. Click **View**.
5. The *<rule name>* dialog appears.
6. Click **Close** when finished viewing the rule details.

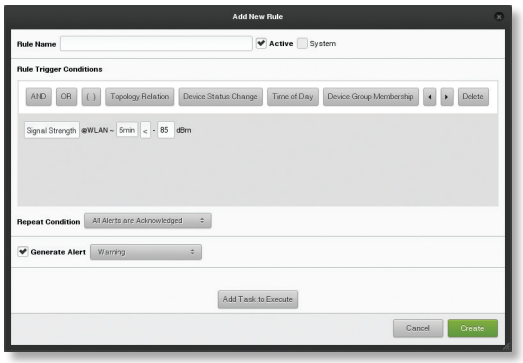
Edit



To modify the details of an existing rule:

1. Click **Edit** to display the *Edit <rule name>* dialog.
2. Make changes to the rule as needed. For detailed information on configuring the various options associated with the rule, refer to **"Add" on page 32**.
3. Click **Apply** to save and apply the changes.

Add



The *Add New Rule* dialog is used to create a new rule, with one or more trigger conditions and additional related options. Types of trigger conditions include:

- **Device Field** Used to trigger alerts based on the value of a device field. This is the default type of condition. For a list of available fields, refer to **"Device Fields" on page 45**.
- **Topology Relation** Used to trigger an alert based on a device's location within the system topology.
- **Device Status Change** Used to trigger an alert based on a specific change in a device's status.
- **Time of Day** Used to trigger an alert based on the time of day (specified in 10-minute intervals).
- **Device Group Membership** Used to trigger an alert for devices belonging to a group whose *Included Devices* option is set to *Add manually*.

To add (create) a new rule:

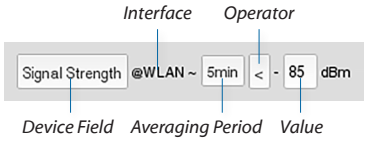
1. Click **Add**. The *Add New Rule* dialog appears.
2. Enter the *Rule Name*. Select **Active** to make the rule active.
3. Define the trigger condition(s) for the rule as described in **"Defining Trigger Conditions" on page 32**.
4. Select the *Repeat Condition*: **All Alerts are Acknowledged**, **Device Status Changes**, or **Time Elapses**.
5. Select the type of alert to generate: **Critical**, **Warning**, or **Information**. To disable alerts for this rule, uncheck the *Generate Alert* checkbox.
6. To add an optional task to be executed, click **Add Task to Execute**, and select **Reboot Task**, **Start Monitoring Device Task**, or **Email Notification Task**. (For email notification, also enter the *From* and *To* addresses, and a *Subject Prefix*.) You can add up to three tasks.
7. Click **Create** to save the new rule.

Defining Trigger Conditions

Trigger conditions are defined in the top part of the *Add New Rule* dialog, which displays a prototype *Device Field* condition upon opening. To configure a different condition type, click **Topology Relation**, **Device Status Change**, **Time of Day**, or **Device Group Membership**.

Each type of condition is configured as follows:

Device Field Configure the condition as follows:

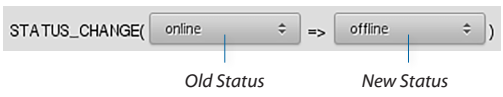


1. To select a different *Device Field*, click the field and select the desired field from the list. The remaining elements of the condition are displayed automatically depending on the field selected. For a list of available fields, refer to **"Device Fields" on page 45**.
2. Select the applicable *Interface* (not available for all fields): **LAN** or **WLAN**. (The *Interface* is automatically populated for certain device fields, as shown above.)
3. Select the *Averaging Period* (not available for all fields): **current**, **5min**, or **30min**.
4. Select the *Operator* that will be used to evaluate the condition (not all operators are available for all fields): **=**, **!=**, **>**, **>=**, **<**, **<=**, **contains**, **startsWith**, or **endsWith**.
5. Enter or select the *Value* to which the *Device Field* will be compared. (Depending on the device field, this can be a user-specified value or a list of hard-coded values; refer to **"Device Fields" on page 45** for details.)

Topology Relation Configure the condition as follows:

1. Click **NOT_SELECTED**. The *Topology Branch* dialog appears.
2. Select the topology branch that will trigger an alert if the device is located on that branch.
3. Click **Select**.

Device Status Change The condition contains two configurable fields: *Old Status* and *New Status*. An alert will be generated if the device status changes from *Old Status* to *New Status*. Configure the condition as follows:



1. Click the *Old Status* and select: **new**, **not monitored**, **online**, **offline**, or **[ANY STATUS]**.
2. Click the *New Status* and select: **new**, **not monitored**, **online**, **offline**, or **[ANY STATUS]**.

Time of Day The condition contains four configurable fields: *Start Hour*, *Start Minute*, *End Hour*, and *End Minute*. Configure the condition as follows:

1. Click the *Start Hour* and select from **00 hrs** to **23 hrs**.

2. Click the *Start Minute* and select from **00 min** to **50 min**.
3. Click the *End Hour* and select from **00 hrs** to **23 hrs**.
4. Click the *End Minute* and select from **00 min** to **50 min**.

Device Group Membership Configure the condition as follows:

- Select the group that will trigger an alert for devices belonging to that group.

  (The group's *Included Devices* option must be set to *Add manually*. For details on this option, refer to **"New Devices Group" on page 42**. An error message is displayed if no groups have the required setting.)

In addition to configuring individual trigger conditions, you can do the following:

- To add another condition, click **AND** or **OR**. The selected operator will be appended to the existing condition(s), followed by a prototype *Device Field* condition. To change the condition type, click the appropriate button: **Topology Relation**, **Device Status Change**, **Time of Day**, or **Device Group Membership**.
- To constrain the order in which conditions are evaluated, add parentheses around pairs of conditions:
  a. While editing the first condition, click **( )** to place parentheses around it.
  b. Click **AND** or **OR** to create the second condition within the parentheses.
  c. Configure the second condition.
- Click ◀ or ▶ to move to the cursor left or right, respectively, between fields. (The cursor's current location is highlighted.)
- To delete the last (right-most) condition, click **Delete**.

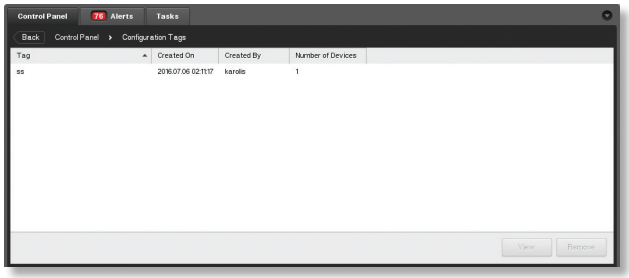
Remove

To remove an existing rule:

1. Select the user role from the list.
2. Click **Remove**.
3. Click **Yes** when prompted to confirm the deletion.

Configuration Tags

The *Configuration Tags* option is used to create named "snapshots" of airOS configuration that can be restored at a later time.



Tag Displays the tag's ID.

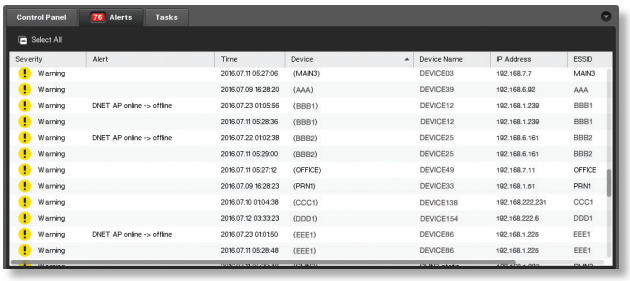
Created On Displays the date and time when the tag was created.

Created By Displays the user who created the tag.

Number of Devices Displays the number of devices that are associated with the tag (you can tag the configuration for multiple devices).

Alerts

The *Alert* tab of the *Application Drawer* displays a list of all system alerts.



The following fields are displayed.

Severity Displays the severity level of the alert: *Information*, *Warning*, or *Critical*.

Alert Displays a description of the alert.

Time Displays the date and time the alert was generated.

Device Displays the device name of the device associated with the alert.

Device Name Displays the name of the device associated with the alert.

IP Address Displays the IP address of the device associated with the alert.

ESSID Displays the ESSID of the device associated with the alert.

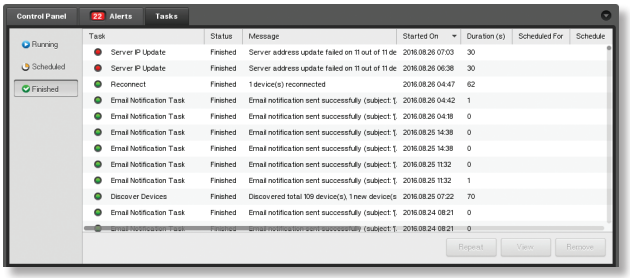
Wireless Mode Displays the wireless mode of the device associated with the alert.

Tasks

The *Tasks* tab of the *Application Drawer* contains the following subtabs (on the left side of the dialog):

- **Running** Tasks that are currently running
- **Scheduled** Tasks that are schedules to run at a later time
- **Finished** Tasks that have finished running

Click the subtab to display the desired task list.



The following fields are displayed.

Active (Available on *Current Tasks* tab only.) Indicates if the task is active (check mark) or not active (no check mark).

Task Displays a description of the task.

Status Displays the status of the task: *Scheduled*, *Running*, *Paused*, and *Finished*.

Message Displays a status message for the task.

Started On Displays the start date and time of the task.

Duration(s) Displays how long the task took to run.

Scheduled For Displays the date and time at which the task is scheduled to run.

Schedule Displays the type of schedule assigned to the task: *Periodically* or *Once*.

Scheduled Until Displays the date and time to stop performing the task.

Repeat Period Displays how often the task is repeated.

Scheduled By Displays the user who scheduled the task.

Cause Displays the cause of the task: *User*, *Scheduler*, or *Rule* (i.e., automation rule).

Started By Displays the username of the user who started the task.

Triggered by Rule Displays the rule that triggered the task.

Number of Times Executed Displays the total number of times that the task has been executed.

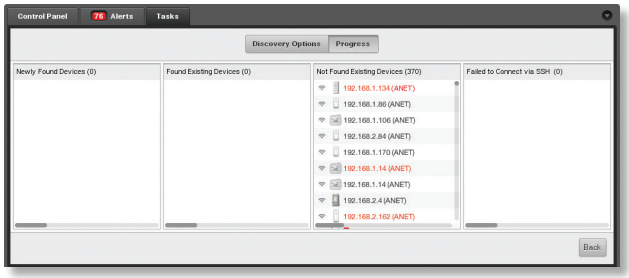
The following buttons are available:

Repeat (Available only on the *Finished* subtab.) Click this button to repeat the selected task.

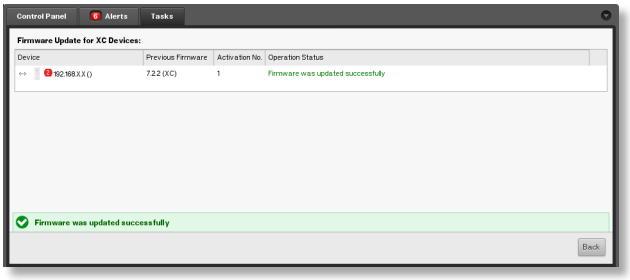
View Click this button to view details on the selected task. Click **Back** when finished viewing the details.

The format of the details displayed depends on the type of task that is selected. Below are two examples:

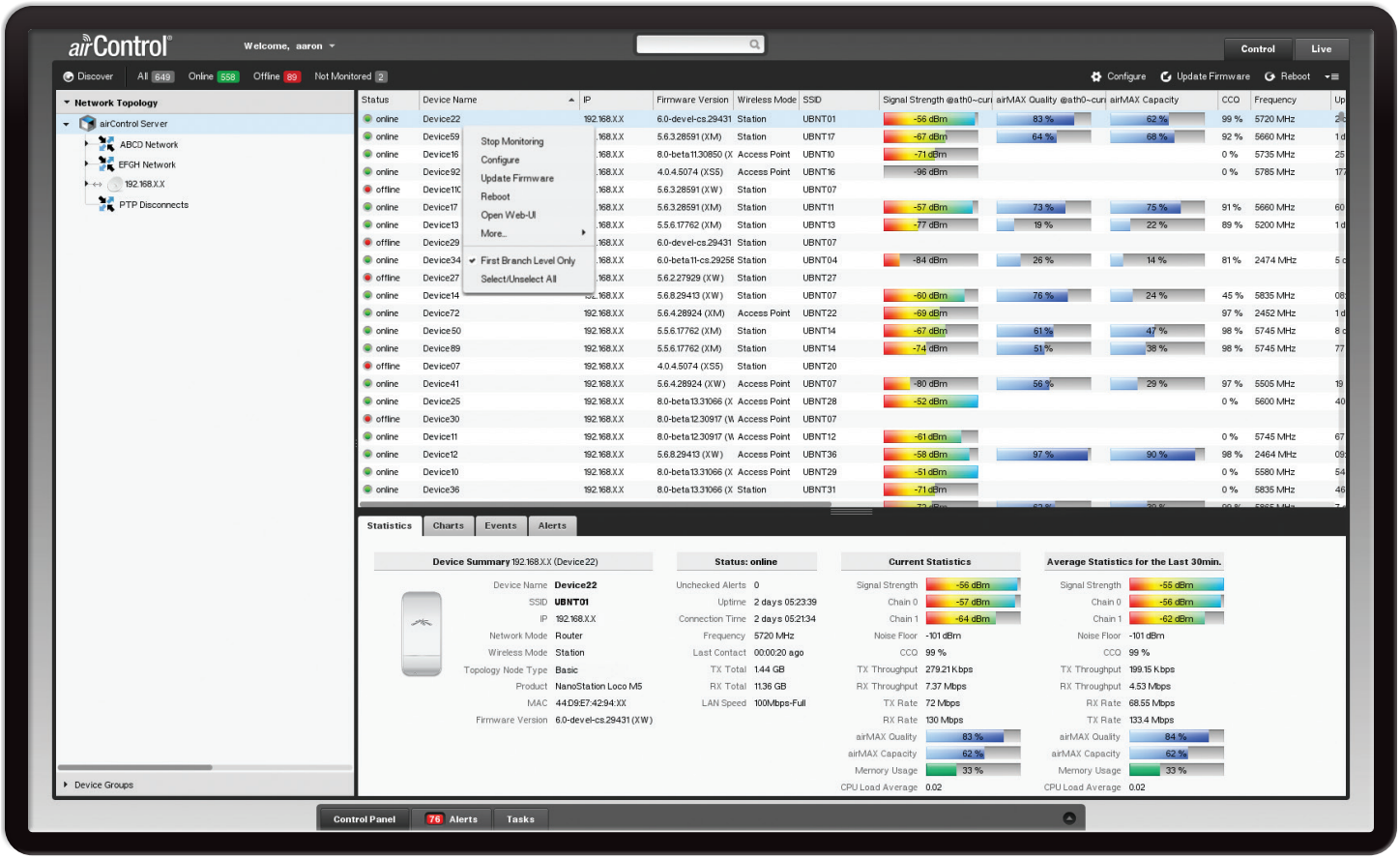
- Device discovery task:



- Firmware update task:



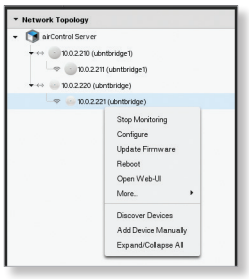
Remove (Available only on the *Scheduled* and *Finished* subtabs.) To delete the selected task from the list, click this button and then click **Yes** to confirm.



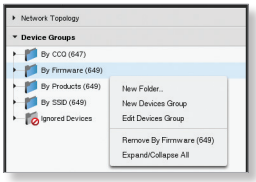
Chapter 8: Context Menu

airControl provides various useful functions through the context menu, accessed by right-clicking the selection.

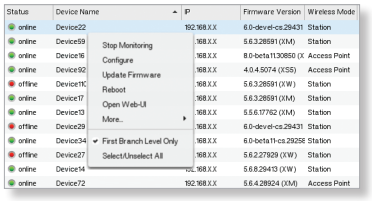
Note: Context menu options vary depending on factors such as number of devices selected, or the part of the UI (*Device Tree*, *Live View* panel, etc.) where the context menu is invoked.



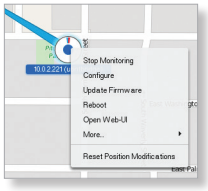
Context Menu - Device Tree (Network Topology Mode)



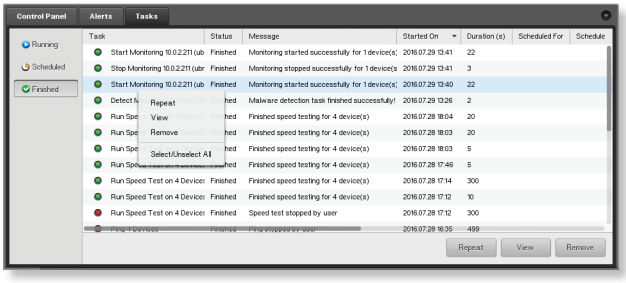
Context Menu - Device Tree (Device Group Mode)



Context Menu - Device List



Context Menu - Live View



Context Menu - Application Drawer

Options can be performed immediately, scheduled to run at a later time, or repeated periodically. For information on scheduling a task, see **"Scheduling Tasks" on page 43**.

Context Menu Options

For detailed information on the context menu options, refer to the appropriate section:

- **"Start/Stop Monitoring" on page 36**
- **"Configure" on page 36**
- **"Update Firmware" on page 37**
- **"Reboot" on page 37**
- **"Open Web-UI" on page 37**
- "More" options:
  - **"Ping" on page 37**
  - **"Speed Test" on page 38**
  - **"Tag Configuration" on page 39**
  - **"Download Configuration" on page 39**
  - **"Malware Cleanup" on page 39**
  - **"Add to Group" on page 39**
  - **"Remove" on page 39**
  - **"Ignore" on page 39**
  - **"Properties" on page 40**
  - **"Copy Details" on page 40**
- **"First Branch Level Only" on page 40**
- **"Select/Unselect All" on page 41**
- **"Discover Devices" on page 41**
- **"Add Device Manually" on page 41**
- **"Expand/Collapse All" on page 42**
- **"Restore Configuration(s)" on page 42**
- **"Download Configuration(s)" on page 42**
- **"Reset Position Modifications" on page 42**
- **"New Folder" on page 42**
- **"New Devices Group" on page 42**
- **"Edit Devices Group" on page 43**
- **"Reattach to Topology" on page 43**
- **"Remove <group>" on page 43**

Note: Information on the following features can be found in the appropriate chapter:

- Detailed device statistics, charts, and event lists: see **"Device Details" on page 21**.
- *Control Panel* and detailed lists of alerts and tasks: see **"Application Drawer" on page 25**.

Start/Stop Monitoring

(This option is only available in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

A discovered device can be monitored or unmonitored. To control (toggle) monitoring of an airOS device:

1. Select the device from the *Live View* display.
2. Right-click the selection to display the context menu.
3. Select **Stop Monitoring** or **Start Monitoring**. A dialog box will appear.
4. Select **Stop Monitoring** or **Start Monitoring** to confirm and perform the operation immediately.

To schedule the monitoring change for a later time, select **Schedule** (refer to **"Scheduling Tasks" on page 43** for detailed instructions on scheduling tasks).

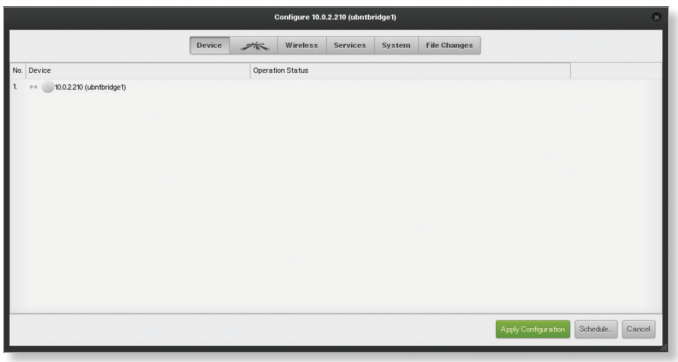
Configure

(This option is only available in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

To configure a single device or multiple devices (mass configuration – making the same configuration changes to multiple devices simultaneously), follow these steps:

Note: Mass configuration is supported only by devices running airOS 5 and airOS 6.

1. Select the device(s) to be configured.
2. Do one of the following:
   - Right-click the selection and select **Configure**.
   - (*Device List* view only) Select **Configure** from the menu bar.
3. The *Configure <device>* dialog will appear. This dialog provides the following tabs:
   - **Device** Identifies the selected device(s).
   - **Ubiquiti logo** Contains options for airMAX, airSelect, and airView.
   - **Wireless** Contains wireless network settings.
   - **Services** Contains options related to services such as ping, web server, etc.
   - **System** Contains system-related settings.
   - **File Changes** This shows the changes that you have made.



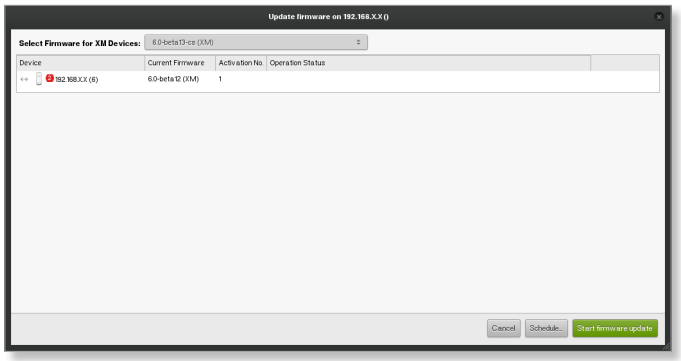
4. Select the appropriate tab(s) and make the desired configuration changes.
5. Select when to apply the configuration changes:
   - To apply the changes now, click **Apply Configuration**.
   - To apply the changes at a later time, click **Schedule** (see **"Scheduling Tasks" on page 43** for details).

Update Firmware

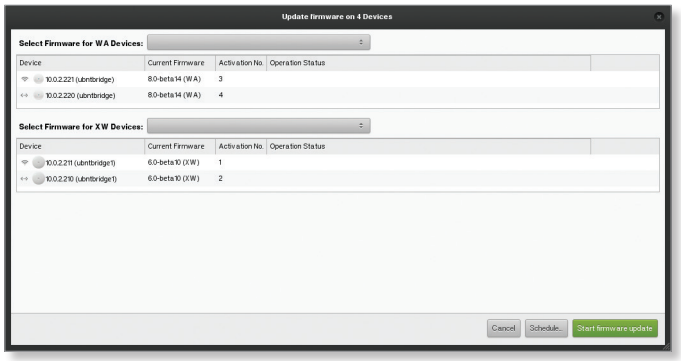
(This option is only available in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

Use this option to update a device's firmware as follows:

1. Select the device(s) whose firmware will be updated.
2. Right-click the selection to display the context menu.
3. Select **Update Firmware**.
4. The *Update Firmware on <selection>* dialog will appear, showing the device(s) that you selected.



5. Click the drop-down box labeled *Select Firmware for <type> Devices* and select the firmware version for the upgrade. If the desired firmware is not listed:
   a. Click **Upload new**.
   b. Navigate to the firmware file and select it.
   c. Click **Select firmware image files**.
   d. The firmware will now be available for selection.
6. If you selected multiple devices and the selection contains diferent device types (XW, WA, etc.), repeat steps 5-6 for each device type.



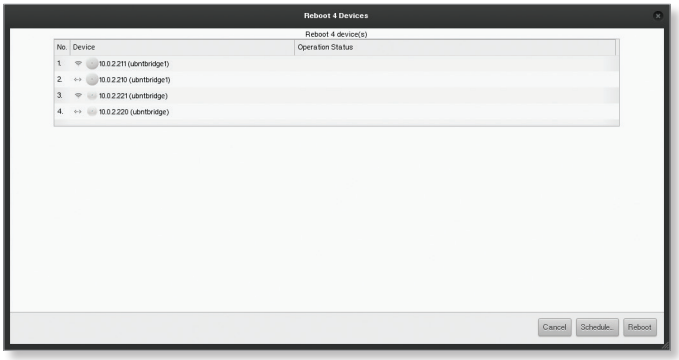
7. Select when to upgrade the firmware:
   - To upgrade now, click **Start Firmware Upgrade**.
   - To schedule the upgrade for a later time, click **Schedule** (see **"Scheduling Tasks" on page 43** for details on task scheduling).

Reboot

(This option is only available in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

Use this option to reboot the selected device(s), as follows:

1. Select the device(s) to be rebooted.
2. Right-click the selection to display the context menu.
3. Select **Reboot**.
4. The *Reboot <selection>* dialog will appear, showing the device(s) that you selected for reboot.



5. Select when to upgrade the firmware:
   - To reboot now, click **Reboot**.
   - To reboot at a later time, click **Schedule** (see **"Scheduling Tasks" on page 43** for details).

Open Web-UI

(This option is only available in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

To manage an individual device using its web-based UI:

1. Select the device(s) to be managed.
2. Right-click the selection to display the context menu.
3. Select **Open Web-UI**.
4. Each device's web UI will open in your web browser. If prompted to log in, enter the username and password and click **Login**.
5. Use the device's web UI to manage the device as needed.

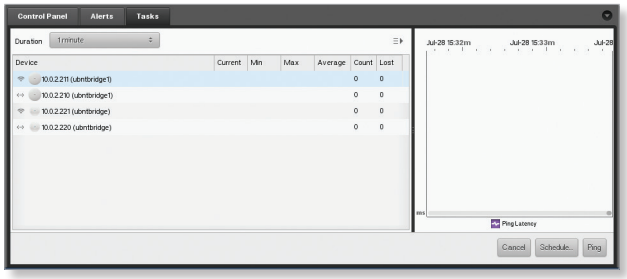
Note: For detailed information on the web UI, refer to the UI's User Guide, which is available at **downloads.ubnt.com**

Ping

(This option is only available in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

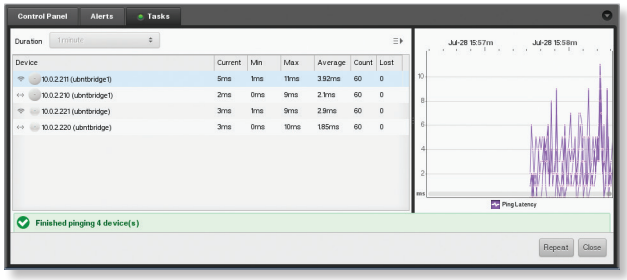
Use this option to run a ping test on the selected device(s):

1. Select the device(s) which you want to ping test.
2. Right-click the selection to display the context menu.
3. Select **More** > **Reboot**.
4. The application drawer opens with the *Tasks* panel selected, showing the selected device(s) and options for the ping test.



- **Duration** Click the drop-down box and select the ping test duration: **1 second**, **4 seconds**, **5 seconds**, **10 seconds**, **30 seconds**, **1 minute**, **5 minutes**, **1 hour**, **3 hours**, or **Continuous**. (If *Continuous* is selected, you must click **Cancel** to end the ping test.)
- **Device** Displays the device being ping tested.
- **Current** Displays the device's current ping latency time in msec.
- **Min** Displays the device's minimum ping latency time in msec for the current ping test.
- **Max** Displays the device's maximum ping latency time in msec for the current ping test.
- **Average** Displays the device's average ping latency time in msec for the current ping test.
- **Count** Displays the current ping count.
- **Lost** Displays the number of lost ping packets.

5. Select when to run the ping test:
   - To run the ping test now, click **Ping**.
   - To schedule the ping test for a later time, click **Schedule** (refer to **"Scheduling Tasks" on page 43** for further information on task scheduling).
6. During the ping test, the *Current*, *Min*, *Max*, *Average*, *Count*, and *Lost* fields are populated with real time data, and the ping latency is plotted on the right side.
7. When the test is finished, you are given the option to run the ping test again; to do so, click **Repeat** and go to step 4 of this section.

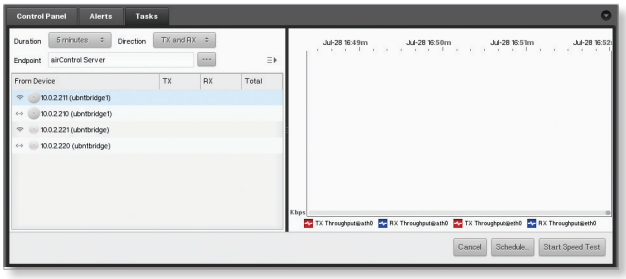


Speed Test

(This option is only available in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

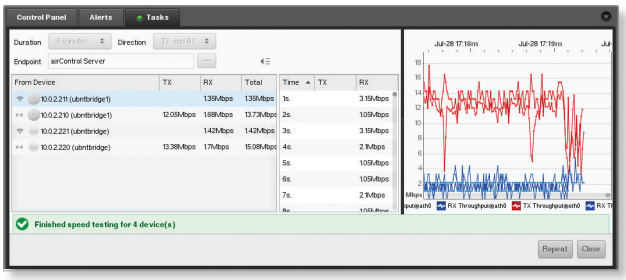
Use this option to run a speed test on the selected device(s):

1. Select the device(s) that you want to speed test.
2. Right-click the selection to display the context menu.
3. Select **More** > **Reboot**.
4. The application drawer opens with the *Tasks* panel selected, showing the selected device(s) and options for the speed test.



- **Duration** Click the drop-down box and select the speed test duration: **5 seconds**, **10 seconds**, **15 seconds**, **20 seconds**, **30 seconds**, **1 minute**, **5 minutes**, **10 minutes**, **15 minutes**, **30 minutes**, **1 hour**, **3 hours**, or **Continuous**. (If *Continuous* is selected, you must click **Cancel** to end the speed test.)
- **Direction** Click the drop-down box and select the direction of the speed test: **TX and RX**, **TX**, or **RX**.
- **Endpoint** Displays the destination for speed test traffic. To change this setting, click the ••• button, select the new destination, and click **Select**.
- **From Device** Displays the device being speed tested.
- **TX** Displays the device's transmit speed.
- **RX** Displays the device's receive speed.
- **Total** Displays the total speed (TX + RX speeds).

5. Select when to run the speed test:
   - To run the speed test now, click **Start Speed Test**.
   - To schedule the speed test for a later time, click **Schedule** (refer to **"Scheduling Tasks" on page 43** for further information on task scheduling).
6. During the speed test, the *TX* and/or *RX* fields (whichever are selected) and the *Total* field are populated with real time data, and the speed(s) are plotted on the right side.



To display a detailed breakdown (by second) of the speed data, click the button. To hide the detailed breakdown, click the button.

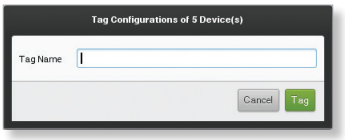
7. When the test is finished, you are given the option to run the speed test again; to do so, click **Repeat** and go to step 4 of this section.

Tag Configuration

(This option is only available for a monitored device in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

Use this option to configure a tag for the selected device(s):

1. Select the device(s) that you want to tag.
2. Right-click the selection to display the context menu.
3. Select **More** > **Tag Configuration**.
4. The *Tag Configuration of <x> Device(s)* dialog opens.
5. Type the desired name into the *Tag Name* field and click **Tag**.



For information on managing configuration tags, refer to **"Configuration Tags" on page 33**.

Download Configuration

(This option is only available for a selected device in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

Use this option to download the configuration from the selected device(s) to a file:

1. Select the device(s) whose configurations are to be downloaded.
2. Right-click the selection to display the context menu.
3. Select **More** > **Download Configuration**.
4. Navigate to the location where you want to save the file. The *Tag Configuration of <x> Device(s)* dialog opens, displaying the name of the file to be saved.

   Note: The default file name contains the device's MAC address and the current date.

5. Click **Save configuration backup** to save the configuration file.

Malware Cleanup

(This option is only available in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

airControl provides the ability to detect malware on your devices, as well as remove any malware that is found. Use this option to run the malware utility to detect and remove malware on the selected device(s):

1. Select the device(s) to scan for malware.
2. Right-click the selection to display the context menu.
3. Select **More** > **Malware Cleanup**.
4. Select the desired operation: **Detect Malware** or **Detect and Clean Malware.**
5. The *Detect Malware <selection>* dialog or the *Clean Malware <selection>* opens.
6. Click **Start** to start detecting malware on the selected device(s). If you selected *Detect and Clean Malware*, any detected malware will also be removed.
7. To check the status or results of the malware detection, go to the *Tasks* tab of the *Application Drawer.*

Add to Group

(This option is only available in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

Use this option to add the selected device(s) to a device group in the *Device Tree*:

1. Select the device(s) that you want to add to a group.
2. Right-click the selection to display the context menu.
3. Select **More** > **Add to Group**.
4. A dialog will display available groups. Select the group that you want to add the device to and click **Add**.

Remove

(This option is only available in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

Note: Only unmanaged devices can be removed.

Use this option to remove the selected device(s):

1. Select the unmanaged device(s) that you want to remove.
2. Right-click the selection to display the context menu.
3. Select **More** > **Remove**.
4. A dialog will notify you if any of the selected devices is managed. If this occurs, click **Force Removal** to unmanage the managed device(s), or, click **Cancel** to end the task.

Ignore

(This option is only available in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

Note: An *ignored* device will not appear in discovery search results. This is useful when, for example, you do not know a device's password – ignore the device to avoid having to re-enter the password. Only unmanaged devices can be ignored.

Use this option to ignore the selected device(s):

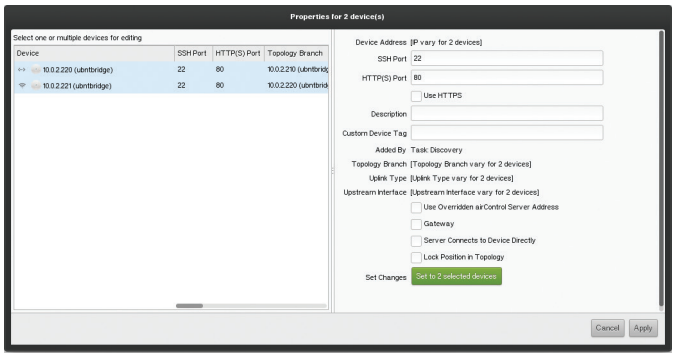
1. Select the unmanaged device(s) that you want to ignore.
2. Right-click the selection to display the context menu.
3. Select **More** > **Ignore**.
4. If a dialog informs you that the device selection contains managed devices, *and* if you are sure that you want to ignore the managed device(s), click **Force moving to 'Ignored Devices' folder**. Otherwise, click **Cancel** to end the task, and then start again from step 1 by redefining the selection without managed devices.

Properties

(This option is only available in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

Use this option to display the *Properties* dialog for the selected device(s):

Properties Dialog - One Device Selected



Properties Dialog - Multiple Devices Selected

The Properties dialog displays information on the selected device(s).

Note: When multiple devices are selected, if all of the devices do not have the same setting for a specific option, the dialog displays "*<Option> varies across n devices*" or similar.

You can also use the *Properties* dialog to modify a device's settings. (After you are finished making changes, click **Apply** to save the changes.)

- **Device Address** Displays the IP address of the selected device(s).
- **SSH Port** Displays the SSH port number for the selected device(s).
- **HTTP(S) Port** Displays the HTTP or HTTPS port for the selected device(s).
- **Use HTTPS** Select this option to enable HTTPS on the selected device(s), or clear this option to disable HTTPS on the selected device(s).
- **Description** Displays a description for the selected device(s).
- **Custom Device Tag** Displays the custom device tag(s), if any, assigned to the selected device(s).
- **Added By** Displays the method used to add the device(s), such as *Task: Discovery*.
- **Topology Branch** Displays the branch of the topology (on the *Device Tree*) to which the selected device(s) are assigned. To change a device's topology branch, click **Select**, select the new branch, click **Select Branch**, and click **Apply** to save the change.
- **Uplink Type** Displays the uplink type: *Wireless uplink* or *Ethernet uplink*.
- **Upstream Interface** Displays the read-only upstream interface.
- **Use Overridden airControl Server Address** Select this option to cause airControl to use an overridden airControl server address. (You must specify the server's address and port number using the next two options.)
  - **Server Address** (Available only if *Use Overridden airControl Server Address* option is selected.) Displays the airControl server's address.
  - **Server Port** (Available only if *Use Overridden airControl Server Address* option is selected.) Displays the airControl server's port number.
- **Gateway** This sets the *Topology Node Type* to *Gateway* (otherwise it is set to *Basic*). Devices that are behind a NAT gateway are accessed using remapped IP addresses. This affects different tasks that take network topology into account.
- **Server Connects to Device Directly** Select this option if the server connects to the device directly.
- **Lock Position in Topology** Select this option to prevent the device's position from being changed automatically by the discovery task (or topology resolution).
- **Set Changes** (Available only if multiple devices are selected.) Click **Set to *n* selected devices** to set the changes on all selected devices.

Copy Details

(This option is only available in the *Device Tree*, *Device List*, *Live View* panel, and the *Statistics* tab of *Device Details*.)

Use this option to copy the setting of selected fields to the clipboard. You can select a specific field (click the button with the field's name), or all fields (click **Copy all fields to clipboard**).

First Branch Level Only

(This option is only available in the *Device List*.)

Use this option to enable/disable the *First Branch Level* feature which restricts the devices displayed in the *Device List* to one level below the root node that is selected in the *Device Tree*. When this feature is enabled, a checkbox is displayed next to it in the context menu; when the feature is disabled, the checkbox is cleared.

Select/Unselect All

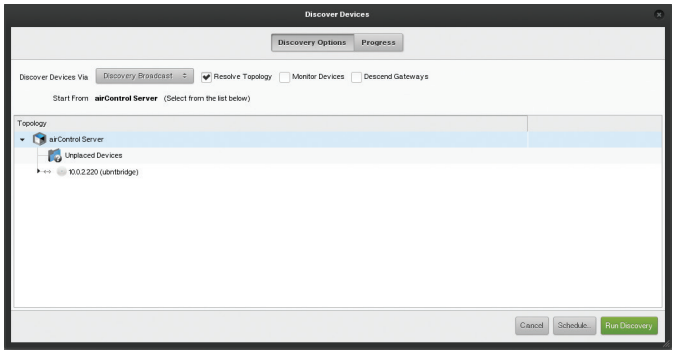
(This option is only available in the *Device List*.)

Use this option to quickly select or unselect all devices in the *Device List*.

Discover Devices

(This option is only available in the *Device Tree*.)

Use this option to perform device discovery. The following dialog will appear:



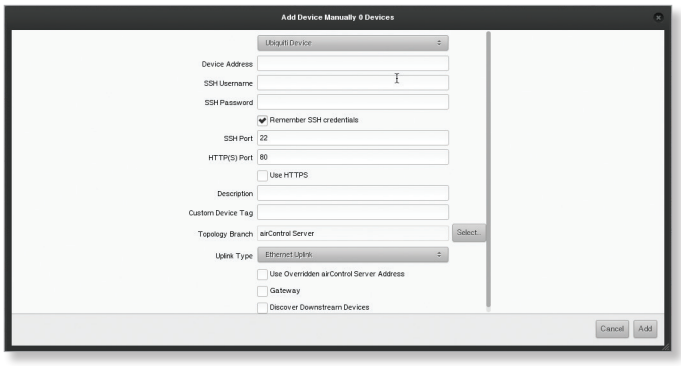
For detailed information on device discovery, refer to **"Device Discovery" on page 13**.

Add Device Manually

(This option is only available in the *Device Tree*.)

Use this option to manually add a device to the system. The dialog that is displayed depends on the type of device being added.

Adding a Ubiquiti Device



Ubiquiti Device Keep the default, *Ubiquiti Device*.

Device Address Enter the device's IP address.

SSH Username Enter the SSH username for the device.

SSH Password Enter the SSH password for the device.

Remember SSH Credentials Select this option to remember the SSH credentials.

SSH Port Displays the SSH port number.

HTTP(S) Port Displays the HTTP(S) port number.

Use HTTPS Select this option to use HTTPS.

Description Enter a description for the device.

Custom Device Tag Enter an optional custom device tag.

Topology Branch Displays the topology branch to which the device belongs.

Uplink Type Select the uplink type: **Ethernet Uplink** or **Wireless Uplink**.

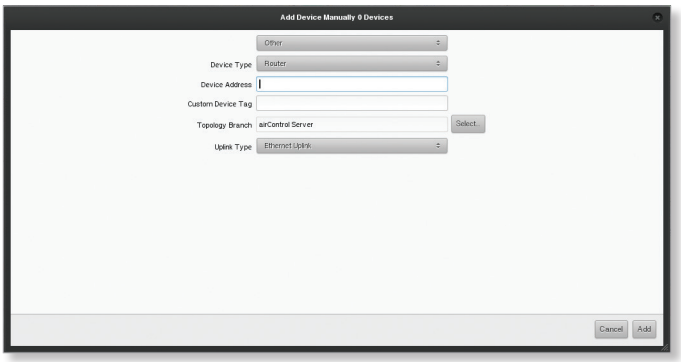
Use Overridden airControl Server Address Select this option to cause airControl to use an overridden airControl server address. (You must specify the server's address and port number using the next two options.)

- **Server Address** (Available only if *Use Overridden airControl Server Address* option is selected.) Displays the airControl server's address.
- **Server Port** (Available only if *Use Overridden airControl Server Address* option is selected.) Displays the airControl server's port number.

Gateway This sets the *Topology Node Type* to *Gateway* (otherwise it is set to *Basic*). Devices that are behind a NAT gateway are accessed using remapped IP addresses. This affects different tasks that take network topology into account.

Discover Downstream Devices Select this option to descend into gateway devices and execute the discovery tool from the gateways.

Adding a Non-Ubiquiti Device



Ubiquiti Device Click the drop-down box and select **Other**.

Device Type Enter the type of device being added.

Device Address Enter the device's IP address.

Custom Device Tag Enter an optional custom device tag.

Topology Branch Displays the topology branch to which the device belongs.

Uplink Type Select the uplink type: **Ethernet Uplink** or **Wireless Uplink**.

Expand/Collapse All

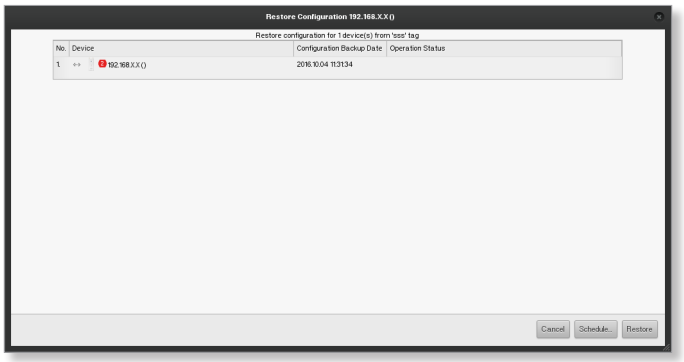
(This option is only available in the *Device Tree*.)

Use this option to quickly expand or collapse the subnodes of the currently select node in the *Device Tree*.

Restore Configuration(s)

(This option is only available for configuration events listed on the *Events* tab of the *Device Details* panel.)

Use this option to restore a configuration saved to a file. The *Restore Configuration* dialog will appear:



The dialog will display saved configuration files. To restore a saved configuration immediately, select it and click **Restore**. To restore a saved configuration at a later time, click **Schedule**. To exit without restoring a configuration,click **Cancel**.

Download Configuration(s)

(This option is only available for configuration events listed on the *Events* tab of the *Device Details* panel.)

Use this option to save the configuration of the device to a file.

When the file selection dialog appears, navigate to the location where the file is to be saved and click **Save Configuration Backup**.

Reset Position Modifications

(This option is only available on the *Live View* panel.)

Use this feature to undo position changes made to the selected device(s) using the *Move* feature in the menu bar.

New Folder

(This option is only available under *Device Groups* in the *Device Tree*.)

Use this feature to create a new folder in *Device Groups*:

1. Right-click on the *Device Tree*.
2. Select **New Folder**.
3. In the *Insert Folder* dialog, enter the new **Folder Name** and click **Add**.

New Devices Group

(This option is only available under *Device Groups* in the *Device Tree*.)

Use this feature to create a device group in the *Device Tree*:

1. Right-click on the *Device Tree*.
2. Select **New Devices Group**.
3. Click **Add**. A form appears in the *Device Details* pane.
4. Enter the **Group Name**.
5. Select the devices to include in the group:
   - **Filtered by criteria** Select devices using criteria that you specify. Refer to **"Device Selection Criteria" on page 42**.
   - **All devices** Select all devices.
   - **Add manually** Add devices to the selection manually.
- Click **Subdivide** to specify additional criteria for selecting devices for the group:
6. Click **Create** to create the device group.

Device Selection Criteria

When creating a new device group, you can define criteria to select the devices for that group. These criteria are created as follows:

- A set of criteria consists of one or more rules.
- Each rule consists of one or more conditions.
- Conditions are of two types: standard or topology-based.

  A topology-based condition selects devices based on their location within the topology.

  A standard condition, which is used to select devices by comparing a field with a user-specified value, consists of the following (for detailed information on the fields, interfaces, and averaging periods, refer to **"Device Tag Tab" on page 8**):
  - **Field** Specify the field associated with the condition.
  - **Interface** (If applicable) Specify the interface associated with the field.
  - **Averaging period** (If applicable) Specify the averaging period: **current**, **5 min**, or **30 min**.
  - **Relational operation** Specify the relational operator to apply to the field: = (equal to), **!=** (not equal to), **>** (greater than), **>=** (greater than or equal to), **<** (less than), **<=** (less than or equal to).
  - **Value** Specify the value to compare the field against.
- To add a new condition to a rule, click the logical operator for the condition: **AND** or **OR**. Then define the condition as described above.
- To control the order of condition evaluation, click **( )** to put parentheses around the currently selected condition in the rule.

- To delete the currently selected condition, click **Delete**.
- Click ◀ or ▶ to move current selection left or right among the fields in the rule.
- To create a topology-based condition, click **Topology Relation**. Then click **NOT_SELECTED**, navigate to and select the applicable topology branch, and click **Select**.

Edit Devices Group

(This option is only available under *Device Groups* in the *Device Tree*.)

Use this feature to create a new device group in the *Device Tree*. To do so, enter the new **Group Name** and click **Add**.

Reattach to Topology

(This option is only available for devices in the *Ignored Devices* folder under *Device Groups* in the *Device Tree*.)

Use this feature to reattach an ignored device to the system's topology. The device will appear in the topology as a regular non-monitored device.

Remove <group>

(This option is only available under *Device Groups* in the *Device Tree*.)

Use this feature to remove an existing device group in the *Device Tree*:

1. Right-click the group to be removed in the *Device Tree*.
2. Select **Remove** <*name of group*>.
3. Click **Yes** to confirm, or click **No** to cancel the operation.

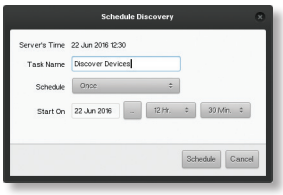
Scheduling Tasks

Many of the context menu options offer the ability to schedule a task to run in the future. In addition, some tasks can be scheduled to run only once or on a recurring basis. If the option's dialog box has the *Schedule* button, you can perform task scheduling as follows:

Scheduling a Task to Run Once

If the dialog does not contain the *Schedule* setting, the task can only be scheduled to run once, as follows:

1. Click **Schedule** to display the *Schedule* <*task*> dialog:



Note: The name of the dialog box varies to reflect the type of task being scheduled.

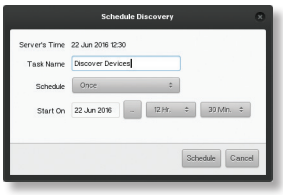
2. Specify the following for the *Start On* setting:
   - Start date: Click **...** to display a calendar, then navigate to the desired month and select the date.
   - Starting hour: Click the middle drop-down box and select from **00 Hr.** to **23 Hr.**
   - Starting minute: Click the right-most drop-down box and select from **00 Min.** to **59 Min.**
3. Click **Schedule** to save the task's schedule information.

The task is now scheduled and will run at the selected day and time. To see the task, select the *Tasks* tab of the *Application Drawer*.

Scheduling a Task to Run Repeatedly

If the dialog contains the *Schedule* setting, the task can be scheduled to run on a recurring basis, as follows:

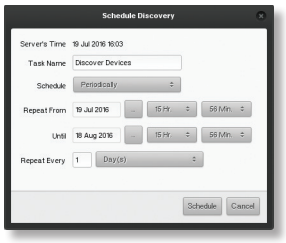
1. Click **Schedule** to display the *Schedule* <*task*> dialog:



Note: The name of the dialog box varies to reflect the type of task being scheduled.

2. Specify the frequency for the task: **Once** or **Periodically** (perform device discovery at set intervals).
3. If you selected *Once* in step 2 (you do not want the task to repeat), then go to step 2 of **"Scheduling a Task to Run Once" on page 43**.

4. If you selected *Periodically* in step 2:
   a. Specify the *Repeat From* setting as follows:



   - Click **...** to display a calendar, then navigate to the desired month and select the date.
   - Click the middle drop-down box and select from **00 Hr.** to **23 Hr.**
   - Click the right drop-down box and select from **00 Min.** to **59 Min.**

   b. Specify the *Until* setting as follows:

   Note: To configure a task to run indefinitely, set the *Until* setting for a date and time far in the future.

   - Click **...** to display a calendar, then navigate to the desired month and select the date.
   - Click the middle drop-down box and select from **00 Hr.** to **23 Hr.**
   - Click the right-most drop-down box and select from **00 Min.** to **59 Min.**

   c. Specify the following for the *Repeat Every* setting:
   - In the text box, enter a number.
   - Click the drop-down box and select **Second(s)**, **Minute(s)**, **Hour(s)**, or **Day(s)**.

   d. Click **Schedule** to save the task's schedule information

The task is now scheduled and will run from the specified starting date and time until the specified ending date and time, recurring with the specified frequency. To see the task, select the *Tasks* tab of the *Application Drawer*.

Appendix A: Device Fields

This appendix describes the device fields. These fields are used to specify the information that airControl displays for devices and are displayed in drop-down menus in the following locations:

- Edit User Settings > Device Tag > Field (refer to **"Device Tag Tab" on page 8**)
- Edit User Settings > Device List > Field (refer to **"Device List Tab" on page 9**)
- Edit User Settings > AP Details > Field (refer to **"AP Details, STA Details, and Multiple Selection Details Tabs" on page 10**)
- Edit User Settings > STA Details > Field (refer to **"AP Details, STA Details, and Multiple Selection Details Tabs" on page 10**)
- Edit User Settings > Multiple Selection Details > Field (refer to **"AP Details, STA Details, and Multiple Selection Details Tabs" on page 10**)
- Control Panel > Automation Rules (refer to **"Automation Rules" on page 31**)

The following table lists each field in alphabetical order, describes each field, lists the field's values (if applicable), and provides additional notes as needed.

Field Name	Description	Values	Notes
Access Point MAC	The MAC address of the access point to which the station is connected.		Not used in Automation Rules.
ACK Timeout	The ACK timeout value in ms.		
Added By	The user or method that added the device.	*<Username>*, *Task Discovery*	
AF Capacity RX	Displays the airFiber device's RX capacity for the specified *Averaging Period*.		Applies to airFiber devices only. Supports averaging.
AF Capacity TX	Displays the airFiber device's TX capacity for the specified *Averaging Period*.		Applies to airFiber devices only. Supports averaging.
AF Channel Width RX	The airFiber device's RX channel bandwidth.		Applies to airFiber devices only.
AF Channel Width TX	The airFiber device's TX channel bandwidth.		Applies to airFiber devices only.
AF Duplex	The airFiber device's duplex type.	Full Duplex, Half Duplex	Applies to airFiber devices only.
AF Frequency RX	The airFiber device's RX frequency.		Applies to airFiber devices only.
AF Frequency TX	The airFiber device's TX frequency.		Applies to airFiber devices only.
AF Link State	The airFiber device's link state.		Applies to airFiber devices only.
AF Operating Mode	The airFiber device's operating mode.	*Master*, *Slave*	Applies to airFiber devices only.
AF Remote IP	The IP address of the remote airFIber station.		Applies to airFiber devices only.
AF Remote MAC	The MAC address of the remote airFiber station.		Applies to airFiber devices only.
AF TX Modulation Rate	The airFiber device's TX modulation rate.		Applies to airFiber devices only.
AF TX Power	The airFiber device's TX power level.		Applies to airFiber devices only.
airMAX Capacity	The airMAX capacity level for the specified *Interface*.	*<percentage>*	Applies only to airMAX M-series devices with airMAX enabled. Wireless interface(s) only. Supports averaging.
airMAX Quality	The airMAX quality level for the specified *Interface*.	*<percentage>*	Applies only to airMAX M-series devices with airMAX enabled. Wireless interface(s) only. Supports averaging.
airTime	The device's current airtime as a percentage of total airtime.	*<percentage>*	Supports averaging.
Alert Count	The number of new alerts for the device.		
Bytes RX	The total number of bytes received on the specified *Interface*.		Summed. WLAN or LAN interfaces.
Bytes TX	The total number of bytes transmitted over the specified *Interface*.		Summed. WLAN or LAN interfaces.
Capacity Downlink	The device's downlink capacity in Kbps/Mbps for the specified *Interface*.		Wireless interface(s) only. Supports averaging.
Capacity Uplink	The device's uplink capacity in Kbps/Mbps for the specified *Interface*.		Wireless interface(s) only. Supports averaging.
CCQ	The wireless Client Connection Quality (CCQ) for the specified *Interface* and *Averaging Period*, where 100% is a perfect link state.	*<percentage>*	Applies only to airMAX M-series devices. Wireless interfaces only. Supports averaging.
CINR	The device's Carrier to Interference-plus-Noise Ratio (CINR) in dBm.		
Connection Time	The device's total connection time.	[*<dd>* days] *<hh:mm:ss>*	Wireless interface(s) only. Applies to Stations only. Days are displayed if the connection time > 24 hours.
CPU Load	The CPU load value.		Supports averaging.
CPU Usage	The device's CPU usage in percent.	*<percentage>*	Supports averaging.
Current Operation	The task or operation the device is currently performing. For example, "Performing monitoring parameters", etc.		Not used in Automation Rules.
Description	Displays a user-defined description of the device.		To set the description, right-click the device. Then click **More**, **Properties**.
Device Added Time	The date and time when the device was added.	*<yyyy.mm.dd hh:mm:ss>*	Not used in Automation Rules.

Field Name	Description	Values	Notes
Device Name	The device's hostname.		
Device Status	The device's status.	*new*, *discovered*, *heartbeating*, *online*, *off_line*, *ignored*, *removed*, *any*	
Device Tag	The device's device tag.		For information on how to configure the device tag, refer to **"Device Tag Tab" on page 8**.
Distance	The distance in km between devices for Acknowledgement (ACK) frames.		
Firmware Version	The device's firmware version number.		
Frequency	The device's operating frequency for the specified *Interface*.		Wireless interface(s) only.
Interface Status	The status of the specified *Interface*.	*Up*, *Down*	LAN interface only.
IP	The IP address of the device's wireless interface.		
LAN Speed	The LAN speed in Kbps/Mbps and the duplex mode.	*10Mbps-Full*, *100Mbps-Full*, *1000Mbps-Full*, *10Mbps-Half*, *100Mbps-Half*, *1000Mbps-Half*	
Last Contact	The time elapsed since the last heartbeat was received from the device.	[<*dd*> days] <*hh:mm:ss*>	Days are displayed if the total time > 24 hours.
Latency	The device's WLAN latency in ms for the specified *Interface*.		Wireless interface(s) only. Supports averaging.
MAC	The remote device's MAC address.		Applies to Stations only. Not used in Automation Rules.
Memory Free	The amount of free memory in KB/MB.		Supports averaging.
Memory Total	The device's total memory capacity in KB.		
Memory Usage	Displays the percentage of memory currently used.		Supports averaging.
Modulation Rate RX	The device's RX modulation rate.	*1x (BPSK)*, *2x (QPSK)*, *4x (16QAM)*, *6x (64QAM)*, *8x (256QAM)*, *Undefined*	
Modulation Rate TX	The device's RX modulation rate.	*1x (BPSK)*, *2x (QPSK)*, *4x (16QAM)*, *6x (64QAM)*, *8x (256QAM)*, *Undefined*	
NAT	The NAT status of the device.	*has NAT*, *no NAT*	
Network Mode	The device's network mode.	*Bridge*, *Router*	
Noise Floor	The noise floor level for the specified *Interface*.		Wireless interface(s) only. Supports averaging.
Number of Clients	The device's total number of clients for the specified *Interface*.		For access points only. Wireless interface(s) only. Supports averaging.
Ping Latency	Displays the ping latency in ms for the specified *Interface*.		Used only by *Edit User Settings* > *Multiple Selection Details*. Supports averaging.
Product	The product name of the device.		
Rate RX	The transmit data rate in Kbps/Mbps for the specified *Interface*.		Wireless interface(s) only. Supports averaging.

Field Name	Description	Values	Notes
Rate TX	The receive data rate in Kbps/Mbps for the specified *Interface*.		Wireless interface(s) only. Supports averaging.
Signal Chain 0	The chain 0 signal level for the specified *Interface*.		Wireless interface(s) only. Supports averaging.
Signal Chain 1	The chain 1 signal level for the specified *Interface*.		Wireless interface(s) only. Supports averaging.
Signal Strength	The signal strength in dBm for the specified *Interface*.		Wireless interface(s) only. Supports averaging.
SSID	The Service Set Identifier (SSID) of the wireless network to which the device belongs.		
Throughput RX	The receive throughput in Kbps/Mbps for the specified *Interface*.		WLAN or LAN interfaces. Supports averaging.
Throughput TX	The transmit throughput in Kbps/Mbps for the specified *Interface*.		WLAN or LAN interfaces. Supports averaging.
Topology Node Type	The device's topology node type. *Gateway* indicates that the device is a logical gateway within the airControl network topology.	*Basic*, *Gateway*	
Uplink Type	The device's uplink type.	*Wireless uplink*, *Ethernet uplink*	
Upstream Interface	The device's upstream interface, which allows the device to connect to other devices higher in the network topology.	*ath0*, *eth0*	
Uptime	The device uptime, the total time the device has been running since the last reboot (device power-up) or software upgrade.	[<*dd*> days] <*hh*:*mm*:*ss*>	Days are displayed if the total uptime > 24 hours.
Wireless Mode	The device's wireless mode.	*Access Point*, *Station*	

Appendix B: Contact Information

Ubiquiti Networks Support

Ubiquiti Support Engineers are located around the world and are dedicated to helping customers resolve software, hardware compatibility, or field issues as quickly as possible. We strive to respond to support inquiries within a 24-hour period.

Ubiquiti Networks, Inc.
2580 Orchard Parkway
San Jose, CA 95131
www.ubnt.com

Online Resources

Support: **ubnt.link/airMAX-Support**

Community: **ubnt.link/airControl**

Downloads: **www.ubnt.com/download/utilities**