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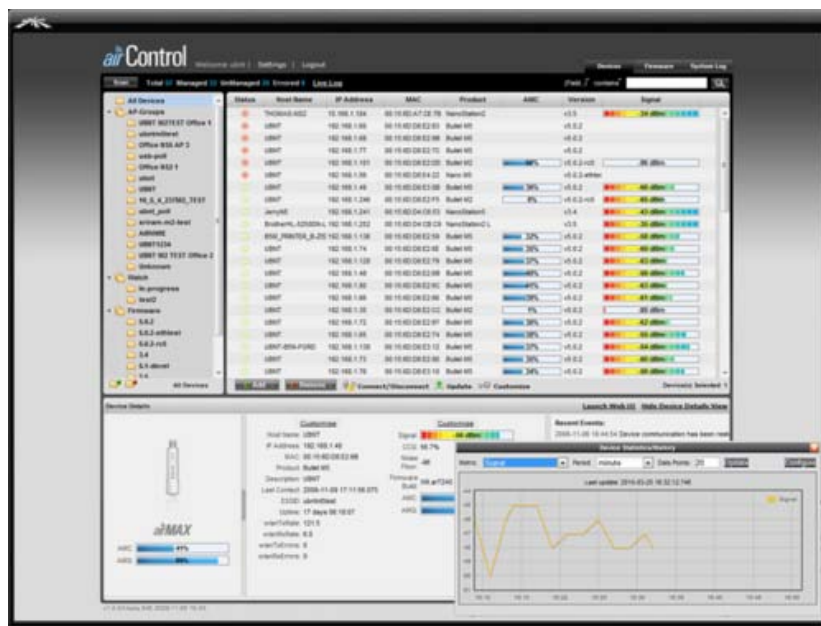Search the Wiki

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AirControl

AirControl User's Guide

Contents [hide]

AirControl User's Guide

Introduction

AirControl is a powerful and intuitive web based server network management application which allows operators to centrally manage entire networks of Ubiquti devices. It provides the following key features:

▸ Discover Ubiquiti devices (access points and stations) within subnet(s) associated to the servers network interface(s). The discovery scan works exactly as found in the existing Ubiquiti discovery tool. In addition, for non-local subnets, there is an option to add a device manually by

specifying its IP address or an IP range to scan for devices.

- Connect devices, report device status: Devices that are under "management" will periodically report runtime status to the AirControl server, which will monitor status updates.
- Firmware update: Devices that are under management can be updated from AirControl. Multiple devices can be updated as a single batch. Firmware images are uploaded by the administrator into AirControl prior to device update.
- View runtime status: The main screen allows reporting on any of the runtime attributes from the device in either the device table or the device details view. The output can be customized.
- Device Grouping: A device tree provides for easy navigation and device selection. Built-in auto-groupings categorize discovered devices by network ID (ESSID) and firmware version. The device tree can be customized by adding custom device groups ("watch lists"). These can be either static groups or dynamic groups, based on reporting criteria.
- Device activity log/history: Reporting of history for specific device in the details area, for the entire system in the log screen and for current activity with the "Live Log" popup. The main screen will also indicate in-progress activity.
- Server application with access to user interface through web browser (HTTP or HTTPS). Multiple users can access single server, no installation required on client other than the web browser. Broad platform support (server runs on every platform for which Sun's Java 6 is available).
- Automatic server update as patches and new releases become available. Automatic updates preserve your data (unlike uninstall/reinstall).
- Historic device statistics reporting through charts. Attributes for which to collect history can be configured and charts plotted for selected period (minute, hour, day) and number of data points.

Installation

The server installation requires Sun's Java 6 Runtime Environment (the latest version can be download from http://java.sun.com/javase/downloads/index.jsp). AirControl requires version 6 of the JVM or higher and includes the Tomcat servlet container. Server installers are provided for Windows XP/Vista/7 (x86) and Debian Linux, plus a generic tarball for other platforms. Windows and Debian installers will install AirControl as service. To manually start/stop the server when not installed as service, use the scripts provided in the bin subdirectory of the installation folder.

If you have previously installed AirControl using the service installer and want to upgrade, please update the installation with automatic update instead of reinstalling. Uninstall will remove your data. Back up your data periodically (directory <AIRCONTROL_HOME>/data).

Installation on Microsoft Windows

System requirements

- A permanently running computer operating under Windows XP, Vista, 7, Server connected to your network
- Java VM version 6 or higher installed.
- A compatible Web browser, like Firefox 3.5 or later, Chrome, IE8 (IE7 and Firefox 3.0 support will be deprecated in one of the next releases).

Note: Internet Explorer 6 and older are not supported.

- SSH service enabled on all the Ubiquiti devices you wish to manage. Also, these devices need to be layer 3 reachable.
- **Ubiquiti 802.11abg device(s) with firmware 3.4 or higher, and/or Ubiquiti M series device(s) with any AirOS firmware.**
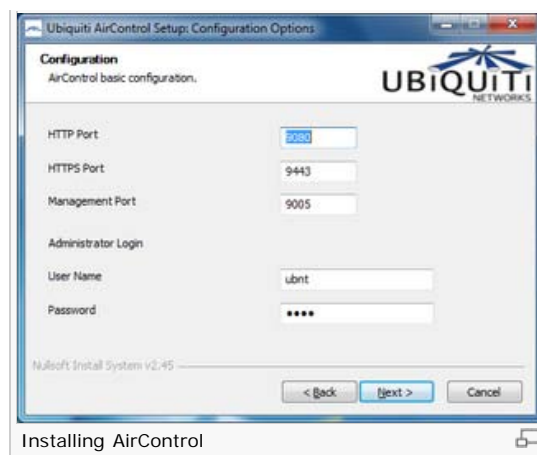

Installing AirControl

Installation: Step to step

- Download latest AirControl version available from http://ubnt.com/aircontrol
- Run installation file
- Follow instructions (press Next to continue) and, provided you agree to License Terms, press **I agree** button.
- Select installation type (Normal is recommended), then press **Next**
- Choose Installation folder, then press **Next**

- Configure basic settings of AirControl, like: HTTP Port (by default: 9080), HTTPS Port (by default:9443), Management Port (by default: 9005) and Administrator credentials (default username and password are **ubnt**). Then press **Next** button.

Note: It's extremely recommended to replace the default Administrator credentials.

- Select the patch of a J2SE 6.0 JRE (Java VM) installed on your system, and then press **Install** to start the installation.

Installing AirControl

- ▶ If you are running Windows Firewall, then install utility will ask if you want to add a firewall exception for AirControl, this is an imperative requirement for AirControl operation, please press **Yes** button.
- ▶ After few second, installation would be done, then mark *Run Ubiquiti AirControl* checkbox and press **Finish** button. AirControl Web GUI will be displayed in your default browser.

First use

To access the application, start your Web browser and enter the URL into the address bar: For example, if the server runs on host "localhost" and uses HTTP port 9080 (the default unless changed during installation), the address will be http://localhost:9080 ☑. If you are accessing from another PC on the network you must enter the *host name where AirControl is installed*:9080.

Once you access the application, you must sign in using the administrative credentials changed in the installation process (by default username: ubnt and password: ubnt).
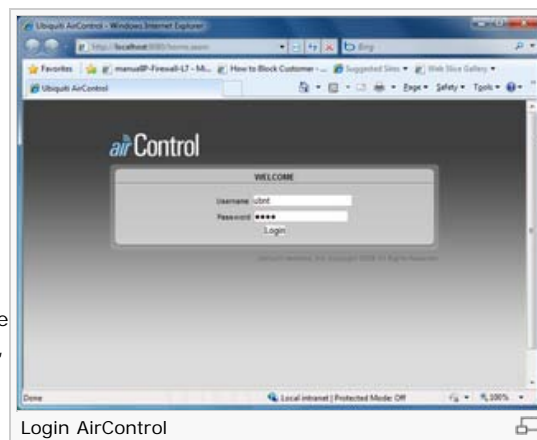
If there is an available update to install, a message box will appears asking you if you which to upgrade to the newest version or not.

It is recommended to always upgrade to the latest version available. To do that click the "Upgrade" button (will take a few minutes). Should the application not respond after upgrading, you must restart the AirControl service…
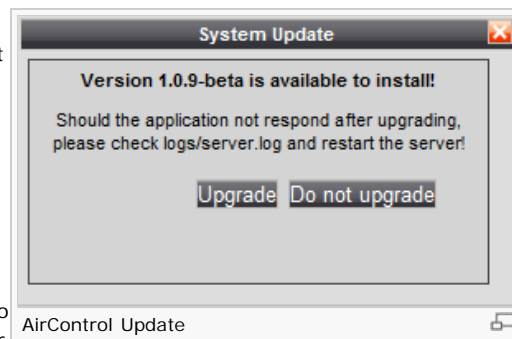

Login AirControl

For HTTPS it would be https://localhost:9443🔒. Note that while HTTPS is supported, you many get warnings or errors in the browser related to the non-trusted default SSL certificate. You can obtain your own SSL certificate from a trusted authority to replace the default certificate or accept it as valid certificate into your browsers certificate store.

AirControl communicates with devices through SSH. All devices therefore need to be layer 3 reachable and SSH service must be enabled on the device. Devices must have firmware version 3.4 or higher installed (M-Series already include AirControl support). AirControl can automatically upgrade a/b/g units with older firmware versions and enable SSH through the web interface when they are put under management (see section connect/disconnect below).

AirControl Update

Devices communicate with the AirControl server through HTTP (with encrypted payload) and require the server to be reachable on the HTTP port specified at installation time. Make sure no firewall settings block this communication. If you find devices after initial connection with error status in the device table, look at the log to determine whether network connectivity could be the cause and check the AirControl HTTP port is reachable from the device.

Communication Protocol

The communication between AirControl and Ubiquiti devices uses SSH service. Device SSH port needs to match whatever the device was configured for. It can be set when connecting, by default SSH port is 22. And the communication between Ubiquiti devices and AirControl uses HTTP port. The default port is 9080, unless you've assigned a different HTTP to the AirControl port during installation or configured an external IP address and port under settings.

For correct operation, be sure all these ports are open in your firewall(s).

Navigation

Each of the web management pages (listed below) contains parameters that affect a specific aspect of the device:

[**Devices**] page displays Ubiquiti devices managed by AirControl.

[**Firmware**] page allow to manage firmware files in AirControl.

[**System Log**] page contains log information about controlled devices and AirControl system.

[**Settings**] page allow to change settings of AirControl, like password, HTTPS access, ping watchdog.

[Content]

Devices

The AirControl server must be in the same sub-net to automatically discover devices. If you wish to manage devices that cannot be automatically discovered, you can add them manually.

AirControl Devices

Click on "Add" and "New Device" in the device table toolbar. You have the choice to specify the IP and optionally wireless MAC for a single device directly or enter IP ranges and/or comma separated IP numbers for a unicast discovery scan. Devices that respond to the discovery request will be added in AirControl and show the same information as available with auto-discovery (firmware etc.).

Discovered devices remain listed in AirControl, even when they are no longer online. You can remove devices using "Remove" in the table toolbar. Note that devices are automatically restored when they are found by discovery scan. The "Remove" function is only to remove devices that are no longer in the network.

NAT: Devices on the other side of NAT cannot be discovered automatically. You can connect those devices through forwarded ports: Add unit with IP number of the intermediate node that forwards the SSH port and specify the mapped port when connecting the device (see below, you can also change the IP address when connecting). Currently there is no option to configure the web UI port per device, hence the "Launch Web UI" link won't work for port forwarded management connections. For more information go to AirControl behind NAT.

Scan: Press this button to initiate scan. It will look for new devices on the local subnet. Discovered devices will be shown in the "All Devices" group with a grey status icon.

The AirControl server must be in the same sub-net in order to automatically discover devices. If you wish to manage devices that cannot be automatically discovered, you can add them manually.

Live Log: This option opens a new window with live log information, like devices in upgrade process.

Search: Use the search filter control on top of the device table. Entering a text value into the field and hitting the search button will search for all devices in the system where any of the (alphanumeric) fields currently displaying in the table contain the text entered. To refine search or search on numeric fields, select field and operator with the in-place selectors left to the search value input field.

Devices Groups

Devices can be categorized into groups for ease of navigation. Built in are auto-groupings for network ID and firmware versions, the "All Devices" and "in-progress" dynamic groups. Two types of custom groups that can be created by the user and appear under "Watch" are supported: (1) user managed static groups for which devices are manually added and removed and (2) criteria groups for which group membership is determined by a search criteria (consisting of any of the device attributes and an operator). This can be used to define groups like "signal strength < -60" etc. or "IP Address contains 192.1.168", for example. To create and delete groups, use the tool bar controls under the device tree. To add/remove devices from a static group, use the add/remove controls under the device table.
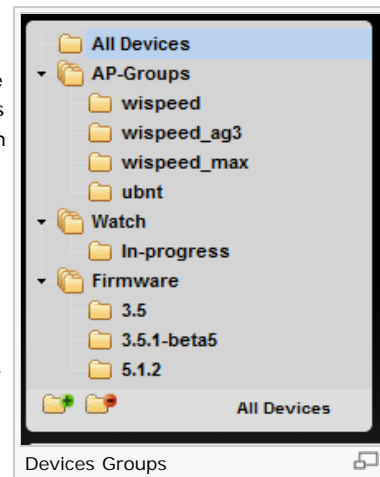

Devices Groups

All devices: displays all Ubiquiti devices that AirControl found in subnet here AirControl is part of.

AP-Groups: displays UBNT devices in the network, but divided by subgroups based on AP (Access Point) name.

Watch: displays the in-progress devices (like the ones currently in upgrade process) and user created groups

In-progress: displays the devices in progress for maintenance actions, such as device upgrades.

Firmware: displays the devices sorted by firmware version.

Add Group: this button allows you to add a personalized group. These user created groups will be displayed in the Watch subgroup.
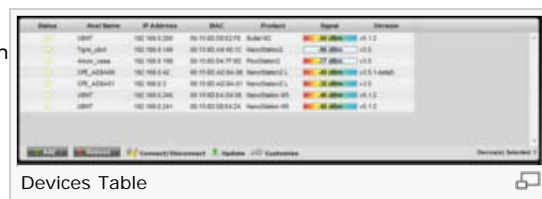
Remove: this button allows you to remove a specific user created group.

Devices Table

Table displays either the devices for the group that was selected in the group tree, or the search result, if a search was performed. Customize the columns of the table by using the "Customize" menu in the tool bar below the table (change the fields displayed and order of the fields). Selections are stored for each user and apply to all device groups. To sort devices displayed, click on the table header (toggle sort order by clicking again). To change the size of table columns, drag the header separator. To change the vertical size of the table, drag the space between table and details area. Currently horizontal space distribution between group tree and table cannot be changed.

Devices Table

The status column shows and LED representing the device's management status. If the color is green, the device is reachable and reports status as expected. If the color is red, the device either cannot reach AirControl for reporting or is down. AirControl will periodically attempt to recover devices in error status (with exponential back-off for recovery attempts if device remains unreachable for long time). You can manually trigger recovery attempt for all error devices through the "Scan" button or by reconnecting a specific device (see connect below). There is currently no support for devices to contact server when they recover, this will be part of a future release.

Add: press this button to add a new device not discovered automatically; it is also used and to add new devices to a user created group.

> **Add new device**: click on this button to add devices that were not discovered automatically (devices on a different subnet). Here you can specify the IP address or optionally wireless MAC for a single device directly or enter IP ranges and/or comma separated IP numbers for a unicast discovery scan. Devices that respond to the discovery request will be added in AirControl.

> **Add to...**: this option allows you to add selected device(s) to a previously user created group. Added devices will appear in the subgroups within the *Watch group.*

Remove: use this option to remove the selected devices from the Devices Table. Note that online devices are automatically restored when they are found by discovery scan. The "Remove" function is only to remove devices that are no longer in the network.

Add new device

Connect/Disconnect: click on Connect button to connect devices to the management server. This is an imperative requirement to manage a device. The server will prompt for the device authentication details and establish a (key based) SSH control channel for management operations. There is an option to remember the credentials entered for future connect operations. If many devices share the same you can check this option to avoid entering the information repeatedly. AirControl will use the SSH connection on demand to issue control operations and perform firmware update only. Periodic communication for device status reporting goes through HTTP from the device to the server, not through SSH.

If the IP address reported from discovery scan is not the IP address under which the device can be reached from the server for whatever reason, expand the device details, you can override the IP address prior to connecting or replace it with a host name.

Connect a device

Note: Currently, in AirControl 1.0.9, dynamic IP changes are not picked up when the device restarts. This will be addressed by the next firmware release. When the IP number changes while the device continues reporting AirControl would record it.

Connect/Disconnect Device(s)

View/Override details per selected device: Check this option to view additional details to connect/disconnect the selected device(s).

SSH port: specify SSH port of device to be managed.

Username: specify Administrator username of device to be managed.

Password: specify Administrator password of device to be managed.

Remember Authentication Details: enable this option to remember the Authentication credentials information.

Device Details

> **Status**: displays status of device to be managed.

> **Name**: displays the host name of the selected Ubiquiti device.

Connect a device

Address: displays the IP address of the selected device.

MAC: displays the MAC address of device to be managed.

Authentication details: This option is only available when you have selected multiple devices to be connected. If you check the Override checkbox you can change the default authentication details (upsters defined) for this (these) device(s). If you don't check this checkbox, the default credentials will be used.

Press **Continue** button to manage this device, or press **Cancel** to exit from the pop-up box.

Note: If you have a device which has changed its IP address and are in the same subnet, AirControl automatically should update the IP address. But, if for any reason it is not recognized by AirControl; you'll have to change the device's IP address in AirControl. To do that select the device to be modified, then press the "Connect/Disconnect" button. Check the "View/Override details per selected device" checkbox, uncheck the "Stop managment for this device" checkbox, and write the new device IP address. Finally, press the "Continue" button.

Changing IP address of a device

Connect devices with firmware lower than AirOS 3.4

The minimum firmware requirement to be managed by AirControl is AirOS 3.4 or higher, if you have devices with firmware lower than AirOS 3.4 follow the following steps to upgrade your devices:

- Upload a firmware file of AirOS 3.4 or higher (3.5 is recommended) to the AirControl server. More information available on *firmware page* ⬀.
- Go to devices page, and select devices to be upgraded and managed, then press **Connect/Disconnect** button. It will launch the expanded connect view. To upgrade the selected devices press **Continue** button. In case you are running a firmware older than AirOS 3.3 the device will reboot prior to upgrade. This operation takes a few minutes, after the process finishes devices will be loaded with the selected firmware and will appear in the All Devices group.

Devices update firmware prior AirOS 3.4

Update: allows to upgrade the firmware, when this button is clicked a dialog opens that shows the selected devices, grouped by target firmware version. If multiple versions are available, the highest version is selected in the drop-down by default. All devices that are part of one update group will be updated as a single batch.

Updates are executed in the background. To see current activity, select the "In-Progress" device group. All devices with pending operations are shown there. To see the detailed status for a particular device, select the device and see the progress indicator in the left hand panel, above the product logo. It shows completion percentage and detail about the current activity.

Customize: this option allows to customize parameters to be displayed on Device table.

Devices update

Device Details

Device details view shows the details for the current selection in the device table. If a single device is selected, the details for that device are shown. If multiple devices are selected, a group summary is shown. If no selection was made in the device table the group summary for the current device group in the tree will be shown. Group summary shows aggregate run time statistics (attribute total or average, depending on whether the attribute reported from the device is an up-time aggregate or current value). Group summary currently only shows a summary for the run-time of the server. We plan to offer reporting interval choices in the

Devices Details

future. For a single device view, product logo, device attributes and history are shown in separate panels. Use the separators between the panels to change the size or collapse the panel (single click on middle part of divider). Customize attribute details shown through the customize menu in either view.

Chart: displays charts regarding specific parameters such as signal level, ping, CCQ, etc for the selected device. The system gathers information for the managed devices in background process.

Launch Web GUI: this option allows you to launch the Web GUI page for the selected device.

Reboot: activate Reboot control in order to initiate full reboot cycle of the selected device(s). Reboot effect is the same as the hardware reboot which is similar to the power off - power on cycle. The system configuration is not modified after the reboot cycle completes. Any non-

applied changes will be lost.

Hide Device Details View: this option disables the Details view of the managed devices.

AMC: (only for M series): This is an index which evaluates the AirMax Connection Quality. The level is based on a percentage value where 100% corresponds to a perfect link state.

AMQ: (only for M series): This is an index of maximum data rate the link is operating at. A Lower Capacity number indicates a unit that is bogging the system down.

Host Name: displays the host name of the selected Ubiquiti device.

IP Address: displays the IP address of the device selected.

MAC: displays the MAC address of the device selected.

Product: displays the product name (ex: NanoStation M5, PicoStation 2) of the device selected.

Description: displays a brief description about the particular device selected.

Last Contact: indicates the last connection between the selected device and AirControl.

ESSID: is the name of the wireless LAN 802.11 Service Set ID of the selected device.

Uptime: This is the running total of time the device has been running since last power up (reboot) or software upgrade. The time is expressed in days, hours, minutes and seconds.

wlanTxRate: displays the current 802.11 data transmission (TX) rate, in Mbps, of the last transmitted packet

wlanRxRate: displays the current 802.11 data reception (RX) rate, in Mbps, of of the last received packet

wlanTxErrors: displays the number of errors on transmitted packets and forces them to be resent.

wlanRxErrors: displays the number of errors on received packets and forces them to be resent.

Signal: displays the received wireless signal level. The represented value coincides with the graphical bar. Use antenna alignment tool to adjust the device antenna to get better link with the wireless device. The antenna of the wireless client has to be adjusted to get the maximum signal strength. Signal Strength is measured in dBm (the Decibels referenced to 1 miliwatt). The conversion is defined as dBm=10log10(P/1mW). So, 0dBm would be 1mW and –72dBm would be .0000006mW. A signal strength of –80dBm or better (-50..-70) is recommended for stable links.

CCQ: This is an index of which evaluates the wireless Client Connection Quality. The level is based on a percentage value where 100% corresponds to a perfect link state.
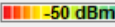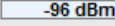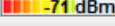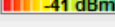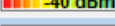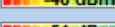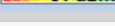
Noise Floor: displays the current value of the noise level in dBm. Noise Floor is taken into account while evaluating the signal quality (Signal-to-Noise Ratio SNR, RSSI) while value mean depends on signal strength above the noise floor.

Firmware Build: displays the version of the AirOS firmware which is currently operating in this device.

Customize: this option allows you to customize parameters that appear in Device Detail page.

Recent events: displays the latest events of the selected device.

Signal chart

Launch Web GUI

Device signal

Firmware

AirControl simplifies firmware upgrade for multiple devices. In order to use the feature, you need to upload firmware images into the server. First, download the firmware image to your computer just as when upgrading individual units through AirOS. Then select the firmware file and upload it to the AirControl server. You are now ready to update units.

Select the devices to update in the device table and click the update link in the table toolbar. A dialog opens that shows the selected devices, grouped by target firmware version. If multiple versions are available, the highest version is selected in the drop-down by default. All devices that are part of one update group will be updated as a single batch.

Updates are executed in the background. To see current activity, select the "In-Progress" device group. All devices with pending operations are shown there. To see the detailed status for a particular device, select the device and see the progress indicator in the left hand panel, above the product logo. It shows completion percentage and detail about the current activity. This is the place to look when the is no progress and the update operation does not complete. Update history and results can be seen in the system log, once complete. If multiple units are updated in a single batch, the last entry will provide a summary.

Firmware

Browse: activate this button to navigate to and select the new firmware file. The full path to the new firmware file location can be specified there.

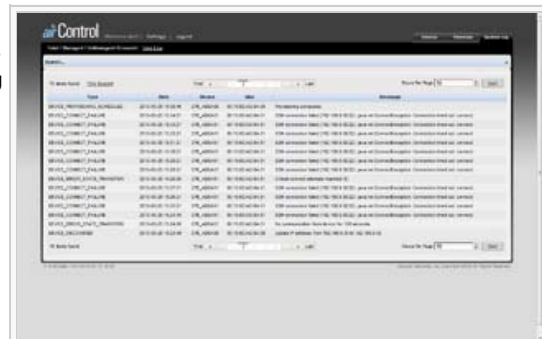**Upload Firmware**: This option transfer the firmware file to the AirControl system.

Remove selected Firmware: Select the firmware file to be deleted from AirControl system.

SysLog

Every logged record contains a Type, Date, Device, MAC address, and a Message. Usually error, warning or informational system services messages are reported, however more detailed Debug level messages can be reported also.

TSV Export: This option allows to download the System log file. The exported file format is TSV.
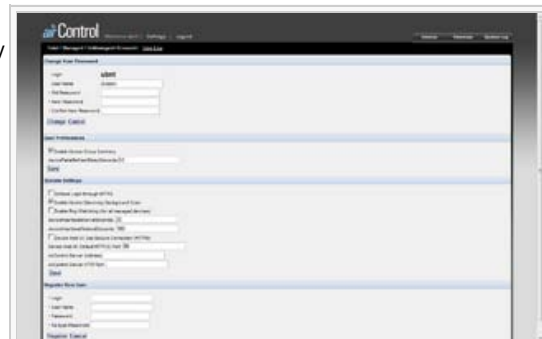
Rows per page: specifies the number of rows per page.

AirControl System Log

Settings

Note: Please note that currently there is no password recovery mechanism available. The master login as of installation time (unless the password was changed) can be recovered by looking at <AIRCONTROL_HOME>/conf/catalina.properties. If you cannot recover the password or login, please reinstall the server. There is currently no function to delete a user in AirControl 1.0.9.

AirControl Settings

Change your password

Login: specifies the login username of the user account.

Username: specifies the name, so that you may identify this particular user account.

Old password: enter the current password associated with this username. It is required for Password or Administrator Username change routine.

New password: new password used for user authentication should be specified.

Confirm new password: new password should be re-entered to verify its accuracy.

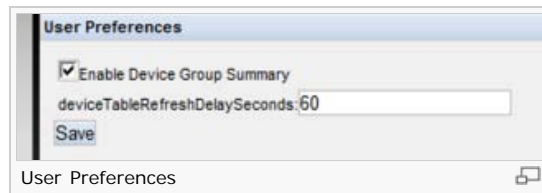Click **Change** button to save or **Cancel** button to discard the changes made in this area.

Change Credentials

User Preferences

Enable Device Group Summary: This option allow to display in Devices page summaries about each defined devices group.

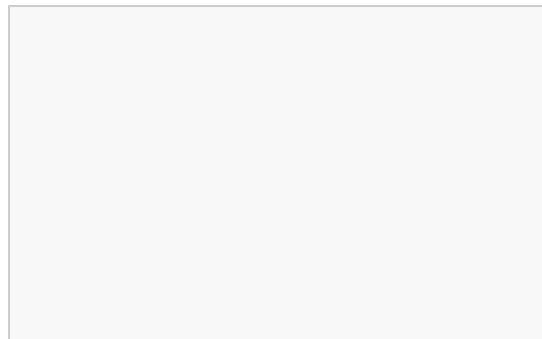Click **Save** button to save the changes made in User Preferences.

User Preferences

System Settings

Enforce Login through HTTPS: If checked AirControl will use secure HTTPS mode. HTTPS mode is unchecked by default.

Enable Device Discovery Background Scan: If checked AirControl automatically scan the local sub-net for new devices to manage.

Enable Ping Watchdog (for all managed devices): control will enable Ping Watchdog Tool for all managed devices. Ping Watchdog is dedicated for continuous monitoring of the devices connection using the Ping tool. The Ping works by sending ICMP "echo request" packets to the target host and listening for ICMP "echo response" replies. If the defined number of replies is not received, the tool reboots the device.

Device Heartbeat Interval Seconds: specifies time interval (in seconds) between the ICMP "echo requests" are sent by the Ping Watchdog Tool.

Device Heartbeat Timeout Seconds: specifies time interval (in seconds) of ICMP "echo response" replies. If the specified time of ICMP "echo response" packets is not received continuously, the Ping Watchdog Tool will reboot the device.

Device Web GUI use secure connection (HTTPS): specifies that the Web GUI link in AirControl should use HTTPS rather than HTTP. Check this when Web GUI on all devices was set to HTTPS.

Device Web GUI port: Devices' HTTP or HTTPS port setting.

AirControl Server Address: enter the public IP address of your network the AirControl server resides in. Fill in this field only if devices are to use an external address/port to communicate with the AirControl server. This is mandatory when AirControl server is not directly reachable from the device (like behind NAT).

AirControl Server Port: states the HTTP port AirControl uses. By default the port is 9080, unless you've changed this during AirControl setup.

Click **Save** button to save the changes made in System Settings.

Register New User

Add new users through this section. It is recommended to create a separate account for each individual using the system.

Login: specifies the login username of the user account.

Username: specifies the name, so that you may identify this particular user account.

Password: password used for user authentication should be specified.

Re-type password: password should be re-entered to verify its accuracy.

Click **Register** button to register the new user account or **Cancel** button to discard the changes.

AirControl behind NAT or Firewall

In case your devices are behind a firewall, you must specify the AirControl Server Address (enter the public IP of your AirControl server) and the AirControl Server HTTP Port (by default this value is 9080, unless you've previously changed it).

The second step is to access to the remote (behind firewall or nat) network via VPN, you can check this article to see how to that.

Finally, you'll have to add the new devices using the Add button in the Device Table page. Then press **new device**. In the 'Scan IP Range' field, type the IP Range and subnet of your remote LAN. This will then scan the range and should find every device in the subnet. When complete, click 'Done'