

This document describes the initial setup of the Aruba Mobility Access Switch. In addition to traditional configuration using the WebUI and CLI, there are three ways to accelerate the configuration of a Mobility Access Switch:

- **WebUI Startup Wizard:** This option allows you to complete the basic configuration through WebUI Startup Wizard.
- **CLI Quick Setup:** This option allows you to complete the basic configuration through the CLI.
- **Zero Touch Provisioning:** This option automatically configures the Mobility Access Switch using one of the following methods:
  - Aruba's cloud-based Activate service and the customer's AirWave Management Platform
  - Aruba's cloud-based management service (Aruba Central)
  - A predefined configuration file downloaded from a TFTP server.



---

The Mobility Access Switch has a default user name (admin) and password (admin123).

---

## Before You Begin

Ensure that the Mobility Access Switch shipment includes:

- Aruba Mobility Access Switch with the appropriate accessories
- *ArubaOS 7.4 Quick Start Guide* (this document)
- ArubaOS End User License Agreement; read and understand the terms of the *End User License Agreement*.



---

Check the customer support web site for the latest software upgrades and documentation updates:  
<https://support.arubanetworks.com>.

---

## WebUI Startup Wizard and CLI Quick Setup

Table 1 describes the WebUI Startup Wizard and CLI Quick Setup configuration parameters.

**Table 1** Configuration Parameters

Parameter	Description
System Name	A user-defined name for the Mobility Access Switch. You can specify a name of up to 63 characters.
Admin Password	Password of up to 32 characters for the <b>admin</b> user to log in to the Mobility Access Switch.
Enable Mode Password	Password of up to 15 characters for the <b>admin</b> user to access the Enable mode at the command line.

**Table 1** Configuration Parameters (Continued)

Parameter	Description
Date and Time	Set the date, time, and GMT time zone manually or use the WebUI Startup Wizard to specify the IP address of an NTP server from which the Mobility Access Switch can obtain its date and time settings. From the CLI, you can only configure the time and date manually.
Inband Management VLAN Interface	Select a VLAN ID, member ports, and choose an IP address (static or DHCP) to create an inband management VLAN.
Out of band Management Interface	Provide an IP address and subnet mask to create an out of band management interface. (This interface is available only on the S2500 and S3500 Mobility Access Switch).
Default Gateway	The default gateway and the VLAN interface IP address must be in the same network. This is usually the IP address of the interface on the upstream switch or router to which you will connect the Mobility Access Switch.

## WebUI Startup Wizard

The WebUI Startup Wizard on the Mobility Access Switch allows you to complete basic configuration steps right out of the box. The Mobility Access Switch must be in the factory default to use the WebUI Startup Wizard.



If you use the WebUI Startup Wizard when the S2500 or S3500 Mobility Access Switch is not in factory default, the error message, **Box not in factory-default** appears on the LCD screen. If you use the WebUI Startup Wizard when the S1500 Mobility Access Switch is not in factory default, the **GUI Quick Setup** mode is not activated.

1. Power On and boot the Mobility Access Switch.
2. Connect a client device (such as a laptop) to the Mobility Access Switch using any Ethernet port in the front. Ensure that DHCP is enabled on the client device and that it is not connected to any other network.
3. For the S2500 and S3500 Mobility Access Switch, perform the following steps:
  - a. Press the LCD **Menu** button until **Maintenance** is selected.
  - b. Press the LCD **Enter** button to enter the **Maintenance** menu.
  - c. Press the LCD **Menu** button until **GUI Quick Setup** is selected.
  - d. Press the LCD **Enter** button to activate the **GUI Quick Setup** mode. **Quick-setup invoked...** appears on the LCD screen.
4. For the S1500 Mobility Access Switch, press and hold the **MODE** button for 10 seconds or until the four mode status LEDs turn solid green to activate the **GUI Quick Setup** mode.



You must complete the WebUI Startup Wizard within 10 minutes of invoking GUI Quick-setup mode, else the Mobility Access Switch no longer functions as a DHCP server; you must begin the process again. The timer in the top right corner of the WebUI displays the time remaining.

5. Confirm that the client device has the IP address in the following range 172.16.0.[1-253] and the DHCP server has the IP address 172.16.0.254.
6. Open a web browser and enter 172.16.0.254 into the address bar to launch the WebUI Startup Wizard.
7. Follow the on-screen prompts to fill in the required fields to complete the configuration (see [Table 1](#)).

## CLI Quick-setup

When you connect a terminal or PC/workstation running a terminal emulation program to the serial port on the Mobility Access Switch, you enter the Initial Setup dialog.



---

For a Mobility Access Switch except the S1500-12P, the serial port is located on the back panel. For the S1500-12P, the serial port is located on the front panel.

---

To run the Initial Setup dialog from a serial connection:

1. Configure the terminal or terminal emulation program with the following communication settings:

**Table 2** *Terminal Communication Settings*

Baud Rate	Data Bits	Parity	Stop Bits	Flow Control
9600	8	None	1	Off

2. Connect a terminal or PC/workstation to the CONSOLE port on the Mobility Access Switch to boot.
3. When booting is complete, at the user prompt, log in with the default credentials.
4. Enter the enable mode. You will see a screen similar to [Figure 1](#).

**Figure 1** *Invoke Quick-setup*

```
User: admin
Password: *****
(ArubaS1500-12P) >en
Password:*****
Zero Touch Provisioning (Activate or DHCP based) of the system has been stopped.

Would you like to use Quick-Setup to help with the basic configuration of the system
(y|n)?
```

5. Enter **y** to invoke Quick-setup. You will see a screen similar to [Figure 2](#).

**Figure 2** *Setup Dialog*

```
***** Welcome to the ArubaS1500-12P setup dialog *****
This dialog will help you to set the basic configuration for the switch.
These settings, except for the Country Code, can later be changed from the
Command Line Interface or Graphical User Interface.

Commands: <Enter> Submit input or use [default value], <ctrl-I> Help
<ctrl-B> Back, <ctrl-F> Forward, <ctrl-A> Line begin, <ctrl-E> Line end
<ctrl-D> Delete, <BackSpace> Delete back, <ctrl-K> Delete to end of line
<ctrl-P> Previous question <ctrl-X>, Restart beginning, <ctrl-C> to exit

Enter System name [ArubaS1500-12P]:
```

6. Provide all the information at the CLI prompt.
7. Review and confirm the configuration changes, and enter **y** to accept the changes.



---

If you choose not to enter the CLI Quick Setup mode initially, but want to return to it later, enter `Enable` mode, execute the `write erase` command, and reboot the Mobility Access Switch using the `reload` command. When rebooting is complete, follow the CLI Quick setup procedure.

---

## Zero Touch Provisioning

The Mobility Access Switch supports zero touch provisioning (ZTP) using one of the following methods:

- By downloading a predefined configuration file from a TFTP server.
- By contacting the customer's AirWave Management Platform (AMP) server using options provided by DHCP.
- By using Aruba's cloud-based Activate service to contact the customer's AMP server.
- By using Aruba Central, Aruba's cloud-based Management service.

For any of the ZTP services, the Mobility Access Switch must receive an IP address via DHCP with the necessary options for it to query a TFTP Server or AMP Server (directly or through information provided by Activate) or Aruba Central.



---

By default, the Mobility Access Switch has the DHCP client enabled on VLAN 1.

---

ZTP starts in the following sequence as soon as a factory default Mobility Access Switch boots up:

1. Mobility Access Switch receives an IP address and server options via DHCP.
2. It first attempts to download the configuration file from the TFTP server based on the DHCP options received.
  - a. If both option 150 and option 67 (IP and filename respectively) are received, it attempts to download the file specified in option 67 from the TFTP server whose address is defined in option 150.
  - b. If only option 150 is received, it attempts to download a file with the name, *<SERIALNUMBER>.cfg* from the TFTP server.
  - c. If none of the above methods is successful, the Mobility Access Switch moves to the next step.
3. It checks for option 60 with a value **ArubaInstantAP**. If the value does not match, it moves directly to Step 4.
  - a. If the value matches, it checks for option 43 to obtain the AirWave configuration parameters.
  - b. If the AirWave parameters are valid, it attempts to contact and register with AMP.
  - c. After successful registration, AirWave configures the Mobility Access Switch.
  - d. If any of the above fails, it moves to Step 4.
4. If DNS servers have been provided by DHCP, the Mobility Access Switch attempts to connect to Activate via <https://devices.arubanetworks.com> and gets the AMP details based on the provisioning rule defined in Activate. If no provisioning rule is defined in Activate, it moves to Step 5.
  - a. The Mobility Access Switch automatically establishes an IPSec tunnel with the Aruba Mobility controller, if a controller IP is provisioned in the Activate server along with the AMP details. If a controller IP is not provisioned, it moves to the next step.



---

The VPN tunnel is established, only if Activate is configured with the IP address of the AirWave Management Platform (AMP) and the controller IP. The use of hostnames for the AMP or the Mobility controller is not currently supported for VPN establishment through ZTP.

---

- b. Mobility Access Switch sends registration request to AMP upon successful receipt of the AMP details.
- c. After successful registration, AirWave configures the Mobility Access Switch.
- d. If all the above steps fail, it moves to the next step.



---

If you have an Aruba Central license assigned to manage your device, Activate automatically directs the Mobility Access Switch to Aruba Central. For more information on provisioning a device using Aruba Central, see "[Aruba Central Based Zero Touch Provisioning](#)" on page 5.

---

5. The Mobility Access Switch keeps polling Activate in the background as long as it is in factory-default configuration. The polling stops as soon as it moves out of factory-default configuration either by user intervention or by other automatic methods.

Each ZTP method is described in detail in the subsequent sections:



---

With a factory default configuration, all physical ports (base and uplink ports) are in VLAN 1 (untagged).

---

You can also configure ArubaStack using ZTP. Ensure that you connect and configure only the primary member of an ArubaStack before connecting the subsequent members. This ensures that the correct configuration is adopted by ArubaStack.

### Important Points to Remember

- The Mobility Access Switch must have:
  - ArubaOS 7.2.1.1 or higher for TFTP based configuration file download.
  - ArubaOS 7.3.1.0 or higher for DHCP based AirWave detection.
  - ArubaOS 7.3.0.0 or higher for Activate service.
  - ArubaOS 7.3.2.0 or higher for Aruba Central.
  - ArubaOS 7.4.0.0 or higher for AirWave ZTP over Aruba VPN
- The Mobility Access Switch must be in factory default for ZTP.
- A DHCP server must be reachable through an untagged interface.
- If WebUI Startup Wizard or CLI Quick Setup is initiated, all ZTP services are disabled.
- The Mobility Access Switch blocks the WebUI and Quick-setup options in the following scenarios:
  - After the configuration file is successfully downloaded from the TFTP server.
  - After the provisioning information is downloaded from the Activate server.

However, the users can still login and configure the Mobility Access Switch.

## Aruba Central Based Zero Touch Provisioning

Starting from ArubaOS 7.3.2, the Mobility Access Switches can be provisioned automatically, through Aruba Central. When you order a Mobility Access Switch and a Central subscription from Aruba, you will receive a welcome email with instructions on how to activate your Central account. For more information on activating your Central account, see *Aruba Central User Guide*.

### Provisioning through the Aruba Central Portal

If you have subscribed to Aruba Central:

1. Go to <https://portal.central.arubanetworks.com> and log in with your user credentials.
2. Connect your Mobility Access Switch to the wired network.
3. Navigate to the **Maintenance > Device Management** page of the Central UI. A list of available Mobility Access Switches will be displayed.

4. To manually add the Mobility Access Switch, click **Add Devices** and enter the MAC Address and the cloud activation key.



---

You can use the **show inventory | include HW** command on the Mobility Access Switch to retrieve the MAC address (lowest on the system) and the **show version** command to view the cloud activation key. The activation key is enabled only if the Mobility Access Switch has Internet access. If you have interrupted the ZTP process using the console or quick-setup, you must apply an IP address (static or DHCP), routing information, and name-servers for the Mobility Access Switch to connect to Activate to enable the activation key. If you have trouble retrieving the activation key, see *Aruba Central User Guide*.

---

5. To assign a license, select the switches and click **Assign License(s)**.
6. Complete the Mobility Access Switch configuration through the Aruba Central portal.

## TFTP Based Zero Touch Provisioning

The TFTP based ZTP service relies on the following:

- Configuration file stored on an accessible TFTP Server—The file name can either be <serial-number-of-device>.cfg or <customer-defined>.cfg.
- Configuration file must be less than 2 MB
- The content in the configuration file must begin with:  
#  
# Configuration file for ArubaOS
- The TFTP server address in the DHCP Offer—The TFTP server address can be stored in siaddr or option 150 or both. If the TFTP server address is included in both, the siaddr takes precedence.
- (Optional) Configuration filename and path in the DHCP Offer—The filename and path can be stored in the boot-file option or option 67, or both. When using this option, you may choose any filename for the configuration as long as the file extension is .cfg. For example, *aruba-mas.cfg*. When not using the boot-file option or option 67, the Mobility Access Switch attempts to download a configuration file name with its serial number (<serialnumber>.cfg).

When these options are processed, the Mobility Access Switch downloads the new configuration file, compares it with the configuration file in use, and if they differ, the new file is copied as default.cfg. The Mobility Access Switch then reboots automatically and loads the new configuration file. A syslog message is logged for every failed or successful configuration download.

For more information, see the *Zero Touch Provisioning* section in the *ArubaOS 7.3 User Guide*.

## DHCP Based AirWave Discovery

Starting from ArubaOS 7.3.1.0, the Mobility Access Switch can be provisioned with the AirWave parameters through DHCP. To achieve this, DHCP options 60 and 43 are used to transmit the AirWave configuration parameters.

To avoid conflicts with Aruba Instant AP deployments, the Mobility Access Switch uses the same DHCP option 60 value (**ArubaInstantAP**), to first validate that DHCP option 43 contains AirWave configuration parameters.

Option 43 is sent in the format, **Group:Top-Folder:Sub-Folder,AMP IP,Pre shared secret** where:

- **Group** maps to Device Group in AirWave.
- **Group:Top-Folder:Sub-Folder** maps to **Folder** information for the device.
- **AMP IP** is the AirWave IP.
- **Pre shared secret** is the shared secret between AirWave and the device.

For example, if the option 43 string is **Acme:Store1,192.168.1.10,aruba123** the following group and folder structure is created on AMP:

- A group with the name, **Acme** is created.
- A top-level folder with the name, **Acme** is created.
- A sub-folder with the name, **Store1** is created.
- AirWave IP is **192.168.1.10**.
- Pre shared secret is **aruba123**.

The format **Group,AMP IP,Pre shared secret** is also accepted as sub-folder is not mandatory in the AMP configuration parameters.

For example, if the option 43 string is **Acme,192.168.1.10,aruba123** the following group and folder structure is created on AMP:

- A group with the name, **Acme** is created.
- A top-level folder with the name, **Acme** is created.
- AirWave IP is **192.168.1.10**.
- Pre shared secret is **aruba123**.

### Important Points to Remember

- If Mobility Access Switch receives AirWave parameters as part of option 43, it will not attempt Activate based Zero Touch Provisioning.
- If option 60 is not offered or does not match the value **ArubaInstantAP**, then the Mobility Access Switch ignores option 43 and initiates the Activate based Zero Touch Provisioning.

### Activate Based AirWave Discovery

Aruba's cloud-based Activate service provides provisioning information so that the Mobility Access Switch can contact and communicate with AMP. When the TFTP based ZTP service fails (no TFTP options provided or connectivity issues) on a factory default Mobility Access Switch, the Mobility Access Switch attempts to contact Activate via <https://devices.arubanetworks.com>. If successful, the Mobility Access Switch sends its MAC address and serial number to Activate. If the appropriate provisioning details (also known as provisioning rules) are available, Activate responds with the AMP IP address, AMP shared secret, AMP group name, and AMP folder name as defined in the provisioning rule.

The Activate based ZTP service relies on the following:

- DNS entries in the DHCP offer so that <https://device.arubanetworks.com> can be resolved.
- Internet access so that Activate can be reached.
- A provisioning rule defined in Activate for the Mobility Access Switch to reach the customer's AMP.
- Connectivity between the Mobility Access Switch and AMP.
- The protocols used by Activate and AMP are as follows:
  - https—All communication with Activate and initial check-in with AMP
  - ssh—Provisioning by AMP
  - snmp—Statistics, status, and trap collection by AMP
  - syslog—Logging collection by AMP



If the device administrator does not run WebUI Startup Wizard, CLI Quick Setup, or begin to manually configure the Mobility Access Switch, the Mobility Access Switch continuously attempts to contact Activate/AirWave. Activate will respond to a device only when the device is associated with a customer that has enabled Activate and configured a provisioning rule.

When the Mobility Access Switch contacts the AMP server, the device will be either automatically assigned to the specified group, or available in the AirWave New Devices List (**APs/Devices > New** page).

- **Automatically Assigned Devices:** A factory default device provisioned from Activate is automatically added to the provisioned group in AMP only if at least one device already exists in the same group with the same shared secret. If this is the first device, AMP prompts the administrator to import the device. This first device becomes the template or golden configuration for all subsequent devices that are added to the group. Ensure that this configuration is stable before pushing it to subsequent devices in the group.
- **Adding Devices from the New Devices List:** A factory default device that is not provisioned from Activate with the same shared secret and group is added to the New Devices List in AirWave. For non-factory default devices that have **mgmt-server type amp** manually defined in their configuration, AMP prompts you for the Community String, Telnet/SSH Username and Password, and the Enable Password to facilitate importing the device. See [Figure 3](#).

**Figure 3** Adding Devices from the New Devices List

Aruba Networks

New Devices: 1   Wired: 2   Wireless: 0   Mismatched: 0   Clients: 3   Alerts: 1

Home   Groups   **APs/Devices**   Clients   Reports   System   Device Setup   AMP Setup   RAPIDS   VisualRF

List   **New**   Up   Down   Mismatched   Ignored

To discover more devices, visit the [Discover](#) page.

1-1 of 1 APs/Devices   Page 1 of 1   Reset filters   Choose columns   Export CSV

Device	Group	Folder	Type	IP Address	LAN MAC Address	Discovered	Device State
<input type="checkbox"/> Aruba Networks-14:A0:40	Switches	Top	Aruba S3500-48T	10.17.28.228	00:1A:1E:14:A0:40	10/17/2013 3:44 PM	Factory

1-1 of 1 APs/Devices   Page 1 of 1   Reset filters

Select All - Unselect All

View Ignored Devices

Group: Access Points

Folder: Top

Monitor Only  
 Manage Read/Write

Add

Ignore   Delete

Replace Hardware

## Manual Connection to Airwave

When Activate is not accessible (no DHCP, no Internet access, etc.) but AMP is available, you can manually configure the Mobility Access Switch to point to AMP through CLI Quick Setup. During quick-setup, when the CLI prompts for **Configure Airwave Management Platform (AMP) parameters [yes/no]**;, enter

**yes.** You will see additional configuration parameters for AMP as shown in the following table. Provide all the information at the CLI prompt.

**Table 3** AMP Configuration Parameters

Parameter	Description
AMP IP Address	IP address of the AMP server that will manage this Mobility Access Switch.
AMP Shared Secret	The shared secret between AMP and the Mobility Access Switch. This shared secret is to validate if a Mobility Access Switch belongs to a group when auto-authorize is enabled in AMP.
AMP Group Name	Group name in AMP where the Mobility Access Switch will reside.
AMP Folder Name	Folder name in AMP where the Mobility Access Switch will reside.

### Additional Communication Details Between Activate and AMP

- A Mobility Access Switch contacts the AirWave server every one hour and every time it reboots.
- A Mobility Access Switch contacts the Activate server every seven days if the Activate Firmware Service is enabled. If the Mobility Access Switch is unable to contact Activate, it will try to establish a connection every 60 seconds.

For more details, refer to *Chapter 4, Automatic Configuration with Aruba Activate* in the *ArubaOS 7.3 User Guide*.

## Contacting Support

**Table 4** *Contact Information*

Main Site	<a href="http://arubanetworks.com">arubanetworks.com</a>
Support Site	<a href="http://support.arubanetworks.com">support.arubanetworks.com</a>
Airheads Social Forums and Knowledge Base	<a href="http://community.arubanetworks.com">community.arubanetworks.com</a>
North American Telephone	1-800-943-4526 (Toll Free) 1-408-754-1200
International Telephones	<a href="http://www.arubanetworks.com/support-services/support-program/contact-support">http://www.arubanetworks.com/support-services/support-program/contact-support</a>
Software Licensing Site	<a href="http://licensing.arubanetworks.com">licensing.arubanetworks.com</a>
End of Support information	<a href="http://www.arubanetworks.com/support-services/end-of-life-products/end-of-life-policy/">http://www.arubanetworks.com/support-services/end-of-life-products/end-of-life-policy/</a>
Security Incident Response Team (SIRT)	<a href="http://www.arubanetworks.com/support-services/security-bulletins/">http://www.arubanetworks.com/support-services/security-bulletins/</a>
Support Email Address	
Americas, EMEA, and APAC	<a href="mailto:support@arubanetworks.com">support@arubanetworks.com</a>
EMEA	<a href="mailto:emea_support@arubanetworks.com">emea_support@arubanetworks.com</a>
SIRT Email Please email details of any security problem found in an Aruba product.	<a href="mailto:sirt@arubanetworks.com">sirt@arubanetworks.com</a>

## Copyright

© 2014 Aruba Networks, Inc. Aruba Networks trademarks include  Airwave, Aruba Networks®, Aruba Wireless Networks®, the registered Aruba the Mobile Edge Company logo, Aruba Mobility Management System®, Mobile Edge Architecture®, People Move. Networks Must Follow®, RFProtect®, Green Island®. All rights reserved. All other trademarks are the property of their respective owners.

## Open Source Code

Certain Aruba products include Open Source software code developed by third parties, including software code subject to the GNU General Public License (GPL), GNU Lesser General Public License (LGPL), or other Open Source Licenses. Includes software from Litech Systems Design. The IF-MAP client library copyright 2011 Infoblox, Inc. All rights reserved. This product includes software developed by Lars Fenneberg et al. The Open Source code used can be found at this site:

[http://www.arubanetworks.com/open\\_source](http://www.arubanetworks.com/open_source)

## Legal Notice

The use of Aruba Networks, Inc. switching platforms and software, by all individuals or corporations, to terminate other vendors' VPN client devices constitutes complete acceptance of liability by that individual or corporation for this action and indemnifies, in full, Aruba Networks, Inc. from any and all legal actions that might be taken against it with respect to infringement of copyright on behalf of those vendors.

## Warranty

This hardware product is protected by an Aruba warranty. For details, see Aruba Networks standard warranty terms and conditions.

© 2014 Aruba Networks, Inc. All rights reserved.



0511677-01



[www.arubanetworks.com](http://www.arubanetworks.com)

1344 Crossman Avenue  
Sunnyvale, California 94089

Phone: 408.227.4500  
Fax 408.227.4550

