

AeroScout Location Engine and Aruba Wireless Infrastructure

CONFIGURATION GUIDE
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Abbreviations and Terms

Terms	Description
AEM	AeroScout Engine Manager
AP	Access Point
CLI	Command line Interface
ICMP	Internet Control Message Protocol
IP	Internet Protocol
MAC	Media Access Control (Hardware Address)
PDA	Personal Digital Assistant
RFID	Radio Frequency Identification
RTLS	Real Time Location System
Tag	AeroScout Tag
UDP	User Datagram Protocol
VLAN	Virtual Local Area Network
VoWLAN	Voice Over Wireless Local Area Network
Wi-Fi	Wireless Fidelity or WLAN
WLAN	Wireless Local Area Network

Introduction

STANLEY Healthcare's Unified Asset Visibility solutions utilize the power of Wi-Fi networks to provide significant business benefits through Real-time Location, Active RFID, sensors, and telemetry. STANLEY Healthcare uses Wi-Fi and other wireless networking standards to accurately track the real-time location and status of valuable assets such as equipment or people. By leveraging popular wireless data communications standards, STANLEY Healthcare's solutions add minimal incremental cost to a communications network and enable a broad set of visibility applications. With STANLEY Healthcare's innovative MobileView software, customers turn visibility information into everyday decisions, to improve operational efficiency and drive a compelling ROI

Aruba Networks has partnered with Stanley Healthcare (previously AeroScout), a leading developer of Wi-Fi based Active RFID solutions, to address the demand for advanced visibility and improved business processes. An integrated 802.11 RTLS solution from Aruba and STANLEY Healthcare enables organizations to securely run both existing mobile applications and new location-based applications on one common network. Using common network infrastructure for data, voice, and location services yields significant capital and operating cost savings both at the time of installation and over the life of the system.

Solution Overview

Aruba's integrated real-time location capability is ideal for identifying the source of interference, rogue devices, and specific client devices. AeroScout enhances this capability by enabling real-time tracking of thousands of tagged devices, client devices with integrated Wi-Fi including laptops and VoWLAN handsets, and people, e.g. staff and at-risk patients. Aruba provides the Wi-Fi infrastructure and STANLEY supplies AeroScout Wi-Fi tags and excitors for "choke point" detection, room-level and sub-room-level resolution, a Location Engine, and the MobileView Web-based asset visibility platform.

AeroScout Tags

AeroScout Tags send a periodic beacon that is used to identify their location. AeroScout Tags offer outstanding battery life (up to 4 years) and a small form factor. They can be mounted on assets or worn as a badge clip or wristband. AeroScout Tags also support a serial interface that can be used for the transmission of telemetry readings from assets like IV pumps and patient monitors.

In addition to a standard Wi-Fi interface, AeroScout Tags can be triggered by AeroScout Excitors (low frequency or ultrasonic) to send immediate alerts, their precise location, or a customized message. Additional advanced features include motion detection, call-button functionality, temperature and humidity measurement, and tamper-proof configuration.

The unique interface between AeroScout Tags and Aruba Wi-Fi infrastructure conserves tag battery life by enabling communication with the Location Engine through the Wi-Fi network without the battery draining process of actually associating with the Wi-Fi network. The unique communication mechanism is highly scalable, enabling tens of thousands of tags to use the Wi-Fi network without consuming valuable bandwidth or impacting data, voice, or video communications.

STANLEY Healthcare offers a broad range of AeroScout Wi-Fi tags including the market-leading T2 Tags, T3 Flat Tags, T4 Bi-directional Tags, T5 Sensor Tags, T7 Autoclave Tags and Hugs Infant Security Tags.

AeroScout Location Engine

The AeroScout Location Engine determines location using signal strength measurements (RSSI) collected by the Aruba Wi-Fi access points, which can simultaneously serve location sensor and provide network access. Using this infrastructure-based approach to location, in contrast to competing solutions relying

on measurements taken by the tag, enables tracking the location of both AeroScout tags and standard Wi-Fi clients without any software or hardware modification. Supplemental precise proximity detection can be obtained by installing AeroScout Exciters in specific areas of interest, e.g. doorways or specific rooms.

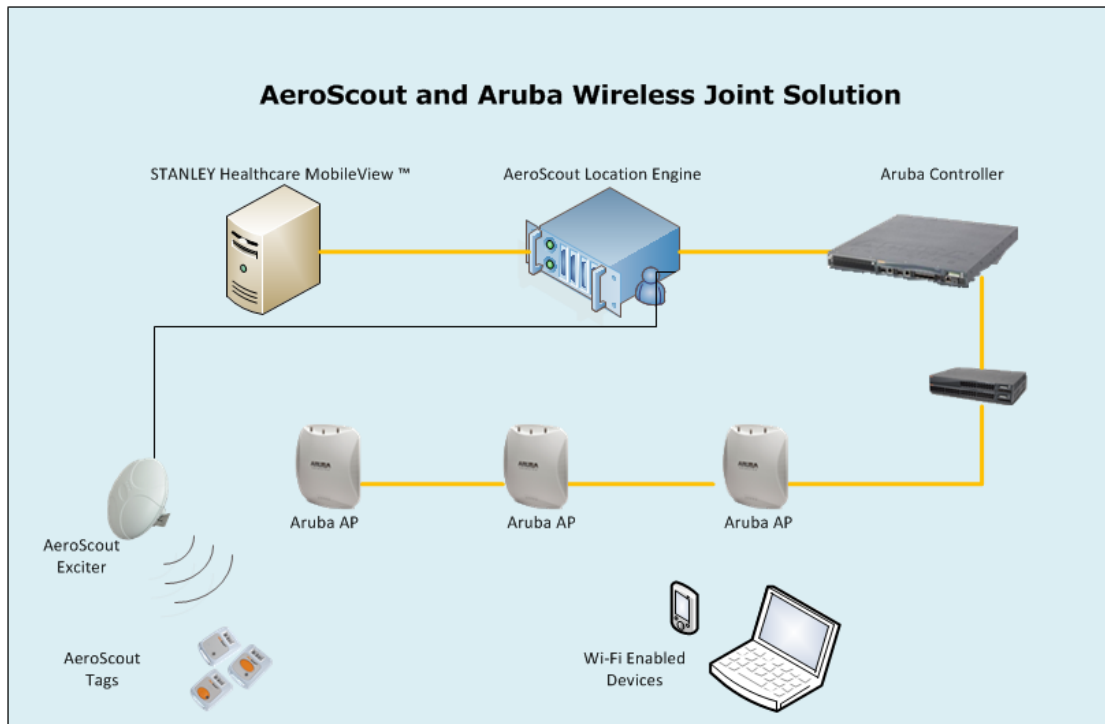
STANLEY Healthcare MobileView

MobileView supports STANLEY Healthcare's strategy of delivering focused, solution-centric applications. Each MobileView application has its own unique functionality, but also leverages the powerful core features offered by the MobileView platform. User experience is tailored to the specific application. The platform enables you to track asset locations and status throughout a site; manage assets and the tags that are used to locate them; set up powerful event monitors, which can automatically send alerts through a variety of channels when certain conditions are met.

MobileView offers a suite of instant reports that can be generated on-demand or automatically run. As assets move or perform tasks, MobileView is notified of their location as well as other important status information.

Solution Setup

General Setup Steps



Interfacing AeroScout tags with an Aruba Wi-Fi network entails the following steps:

- Identify Aruba hardware and software to verify they are the most current compatible products.
- Configure the Aruba Mobility Controller or Aruba Instant Virtual Controller to handle AeroScout Tag reports.
- Configure the AeroScout Engine Manager to include the pertinent Aruba Wi-Fi access points.
- Verify compatibility and supported features.
- In older deployments verify that workarounds have been implemented for any documented issues.

Configuring the Aruba Mobility Controller



Note

To ensure accuracy and good performance the IP address of the Aruba Access Point must be static! (or reserved by the DHCP server).

In Aruba OS versions 5x, the Aruba Mobility Controller must be configured with the specific Engine IP address and port.

Configuring the Aruba Mobility Controller Using the Command Line Interface (CLI)

```
(Aruba800) >ena
Password:*****
(Aruba800) #configure t                               ← Command
Enter Configuration commands, one per line. End with CNTL/Z
(Aruba800) (config) #AP system-profile default
(Aruba800) (AP system profile "default") #
(Aruba800) (AP system profile "default") # AeroScout-rtls-server ip-addr
192.168.101.4 port 12092                               ← Command
(Aruba800) (AP system profile "default") #
```

Configuring the Aruba Mobility Controller Using the WEB-UI

1. Open the Controller WEB-UI
2. From the top menu select **Configuration**.
3. Select **All Profiles**, located at the bottom in the left bar.
4. Open the [AP] by clicking on the plus sign and select **system profile**.
5. Select the appropriate profile (the default profile name is default).
6. In the right column specify the **IP address** and **port** on which the Location Engine will listen to incoming location reports.

The screenshot shows the Aruba Mobility Controller WEB-UI interface. The top navigation bar includes 'Monitoring', 'Configuration', 'Diagnostics', 'Maintenance', 'Plan', 'Events', and 'Reports'. The left sidebar contains a tree view with categories like 'Wizards', 'Network', 'Security', 'Wireless', and 'Management'. The main content area is titled 'Advanced Services > All Profile Management' and displays the configuration for the 'AP system profile > default' profile. The configuration is organized into two columns: 'Profiles' and 'Profile Details'. The 'Profile Details' section includes various parameters such as LMS IP, LMS Preemption, Number of IPSEC retries, RF Band, Native VLAN ID, Bootstrap threshold, Maximum Request Retries, Dump Server, SNMP sysContact, and RTLS Server configuration. The 'AeroScout RTLS Server' section is highlighted, showing the address '192.168.101.4' and port '12092'. The 'Remote-AP DHCP Server VLAN' section is also visible. At the bottom, there is a 'Commands' section with an 'Apply' button and a 'View Commands' link.

Configuring The Aruba Instant Virtual Controller

To configure AirWave RTLS:

```
(Instant Access Point)(config)>ena
Password:*****
(Instant Access Point)#configure t
(Instant Access Point)(config)# aeroscout-rtls <IP-address> <port> include-
unassoc-sta
(Instant Access Point)(config)# end
(Instant Access Point)# commit apply
```

Configuring Aruba Instant Using the WEB-UI

1. Open the Instant WEB-UI (<https://instant.arubanetworks.com> from a wireless client or from a wired client on the same network as the IAP)

The screenshot shows the 'Settings' page in the Aruba Instant WEB-UI. The 'RTLS' tab is selected. Under 'Aruba RTLS', there is a checked checkbox, an IP address field containing '0.0.0.0', empty fields for 'Port' and 'Passphrase', a 'Retype' field, and an 'Update' field set to 'Every 30 seconds'. Below this, the 'Include unassociated stations' checkbox is checked. Under 'Aeroscout', there is a checked checkbox, an IP address field containing '0.0.0.0', an empty 'Port' field, and a checked 'Include unassociated stations' checkbox.

2. From the top menu select **More>Services**. The **Services** window is displayed.
3. Click on the **RTLS** tab.

4. Select the Aeroscout check box to send the RFID tag information to the AeroScout RTLS Engine.
5. Specify **IP address** and **port** on which the Location Engine will listen to incoming location reports
6. Select the **Include unassociated stations** check boxes to send mobile unit reports to the Aeroscout and the Aruba RTLS servers on the client stations not associated to any IAP (unassociated stations)

Configuring AeroScout Engine Manager

Do the following:

1. Open AeroScout Engine Manager.
2. On the map, right-click the physical location of the AP and select **Add, Add Access Point**. The **Access Point Properties** dialog box opens.

3. Enter the following information.

Name

Give the AP a recognizable name.

Vendor

Select Aruba from the drop menu.

IP Address

Enter the controller's IP address.

MAC

Enter the AP's MAC address.

Coordinates

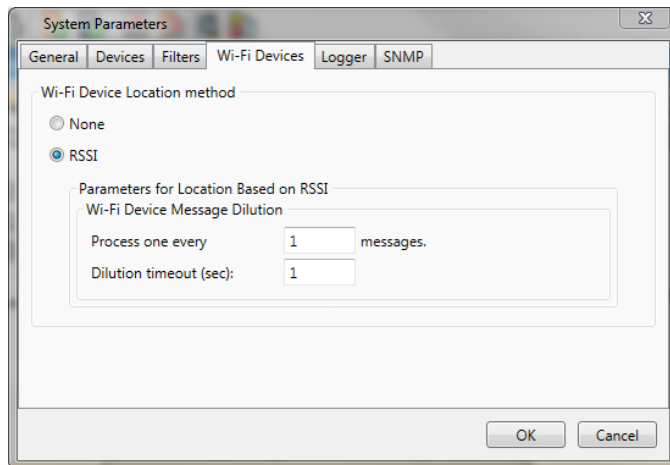
In **Z Coordinates**, enter the height at which the AP is mounted, in meters.

4. Click **OK**.

Configuring an Aruba Access point for Wi-Fi device tracking

Follow these steps:

1. Open AeroScout Engine Manager.
2. Open the **Configure** menu and select **System Parameters**.
3. Click the **Wi-fi Devices** tab.
4. Select the **RSSI** option. Please consult with Support before changing the dilution timeout as this may reduce accuracy.
5. Click **OK**.



Compatibility and Supported Features

Hardware-Software Compatibility between AeroScout and Aruba

The latest version of AeroScout Location Engine compatible with Wireless LAN Infrastructure is available in the STANLEY Healthcare support portal.

Refer to Article #1620 in the Knowledge base.

Supported Tag formats

The Aruba and AeroScout joint solution works with both **IBSS and WDS tag formats**.

The Aruba and AeroScout joint solution can track AeroScout Tags.



Note

The **CCX** format is not supported.

Troubleshooting

If the AP could not be added to the Engine Manager

1. Verify that the AP's IP address in Engine Manager and the IP address of the Aruba AP are identical.

Issue the following command through the switch CLI to verify that the APs are online:

```
show ap active
```

← Command

2. Verify that the AP MAC address in Engine Manager and the AP's MAC on the Ethernet port are identical.

Issue the following commands from the Windows Command line to verify the IP and MAC addresses:

```
Ping <AP and controller IP addresses>
```

← Command

```
Type arp -a (to see the arp table and to verify which MAC is bind to which AP).
```

← Command

If tags are not visible in Engine Manger:

1. Issue the following command from the switch CLI to verify the VLAN 1 address:

2. Verify the AeroScout Engine IP address and port in the Aruba Mobility Controller configuration

Method #1:

```
#show AP system-profile <profile name> ← Command
```

In the output look for this line

```
AeroScout RTLS Server <AE IP address>:12092 ← Output
```

Method #2:

```
(Aruba800) #show running-config | include aero ← Command
```

Building Configuration...

```
aeroscout-rtls-server ip-addr 192.168.101.4 port 12092 ← Output
```

3. Verify the AP's MAC address and IP address (note the AP Status is UP or Down):

```
(Aruba800) #show ap database ← Command
```

AP Database

```
Name Group AP Type IP Address Status Flags Switch IP ← Output
```

```
00:0b:86:c0:c8:70 default 65 192.168.101.85 Down 192.168.101.14
```

4. Verify that tag reports are received at the Aruba Mobility Controller (using a sniffer such as Wire Shark).
5. Verify the AeroScout Engine IP address and port in the Aruba Instant Virtual Controller configuration
- 6.

Check the list of common problems

1. Verify that all channels offered by the Aruba infrastructure are configured on the tag issue the following command:

```
(Aruba800) #show ap regulatory-domain-profile default ← Command
```

Regulatory Domain profile "default"

```
Parameter Value
```

```
Country Code IL
```

```
Valid 802.11g channel 13
```

```
Valid 802.11a channel 36
```

```
Valid 802.11g 40MHz channel pair N/A
```

```
Valid 802.11a 40MHz channel pair N/A
```

2. Verify channel settings. (Only 11-g channels are valid.)

```
(Aruba800) #show running-config | include chann ← Command
```

Building Configuration...

```
crypto isakmp groupname changeme
```

`valid-11g-channel 13`

← Output

3. Verify the connection between the Aruba Mobility Controller and AeroScout Positioning Engine (use ICMP ping).
4. Verify that the following communication ports are open:

AeroScout Engine	Aruba AP
12092 (source)	1144 (destination)
Aruba AP	AeroScout Engine
1144 (Source)	12092 (destination)

5. Verify that the **Show Tags** and **Start Display Tags** buttons are pressed.

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