

# **ALTAI Wireless Management System**

## **Quick Start Guide**

**Document Version 1.1**

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## 1 INTRODUCTION

This quick start guide covers:

- i) Chapter 2 - overview of AWMS
- ii) Chapter 3, 4 - preparation for using the software
- iii) Chapter 5 - introduction of the major features of the software
- iv) Chapter 6 - example of general AWMS network management

### Abbreviations and Acronyms

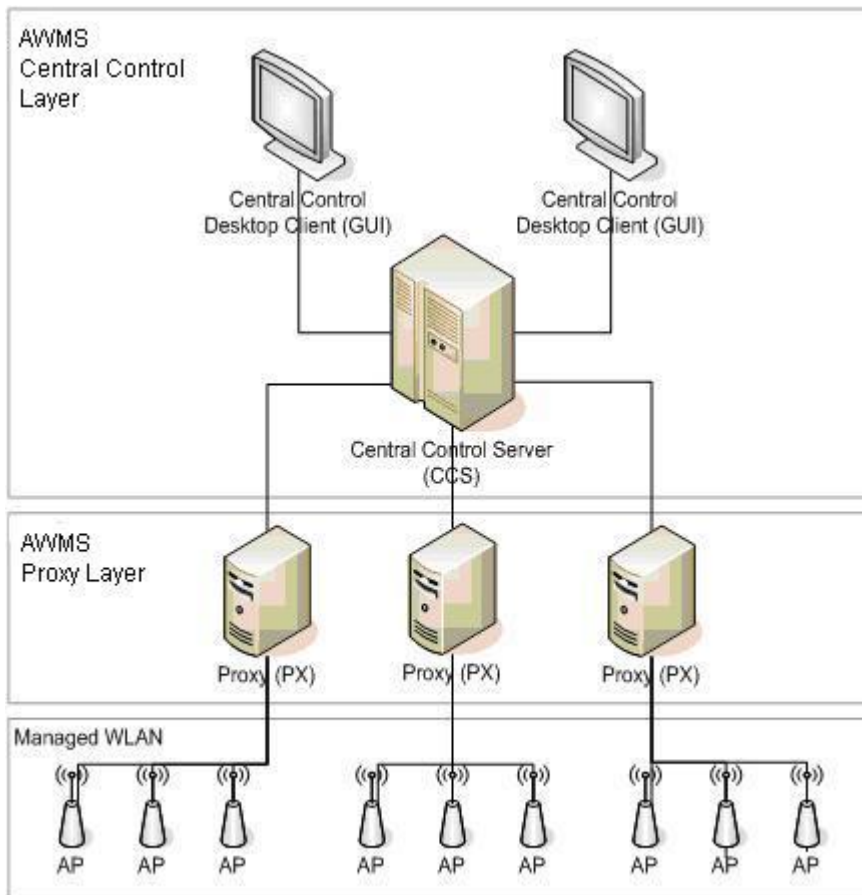
<b>ALTAI</b>	Altai Technologies Limited
<b>AP</b>	Access Point
<b>AWMS</b>	Altai Wireless Management System
<b>CCC</b>	Central Control Desktop Client
<b>CCS</b>	Central Control Server
<b>CLI</b>	Command Line Interface
<b>DHCP</b>	Dynamic Host Configuration Protocol
<b>IE</b>	Internet Explorer
<b>IP</b>	Internet Protocol
<b>NAT</b>	Network Address Translation
<b>NE</b>	Network Element – the network elements that AWMS handles currently are all APs. Therefore the terms “AP” and “NE” are used interchangeably.
<b>PX</b>	Proxy
<b>SNMP</b>	Simple Network Management Protocol
<b>SSID</b>	Service Set Identifier
<b>VLAN</b>	Virtual LAN
<b>VAP</b>	Virtual Access Point

## 2 AWMS INTRODUCTION

AWMS is a network management system for large-scale wireless local area network (WLAN) deployments. It can manage WLANs comprising of various types of Network Elements.

AWMS provides a central management platform to deploy, operate, and maintain large-scale WLANs, focusing on automated network configuration, security and alarm management.

AWMS is composed of three subsystems, Central Control Server, Proxy and Central Control Client.



**Figure 1: AWMS Architecture**

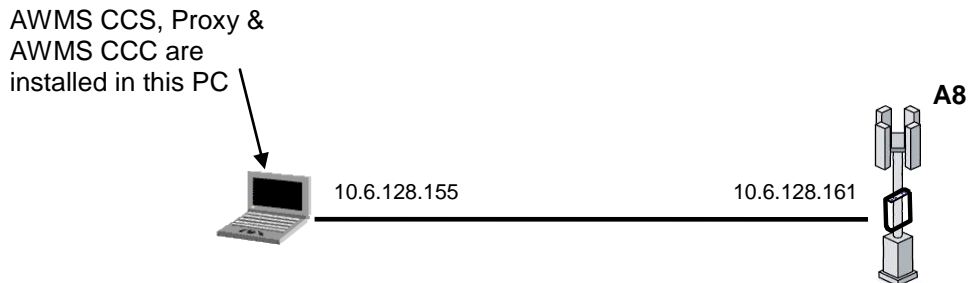
The CCS is the core component of the AWMS. It includes configuration management, alarm management, firmware management and security management. It is also the data base of AWMS.

The Proxy is the local agent between CCS and NEs. The NEs associate to the Proxy, in this case the CCS can manage the NEs through the Proxy. When we need to expand our network deployment, we can have more proxies to share loadings of CCS.

The CCC is a software for users to log in the AWMS system to manage the NEs.

### 3 AWMS CENTRAL CONTROL CLIENT OPERATION EXAMPLE

The AWMS operations are based on the following network architecture:



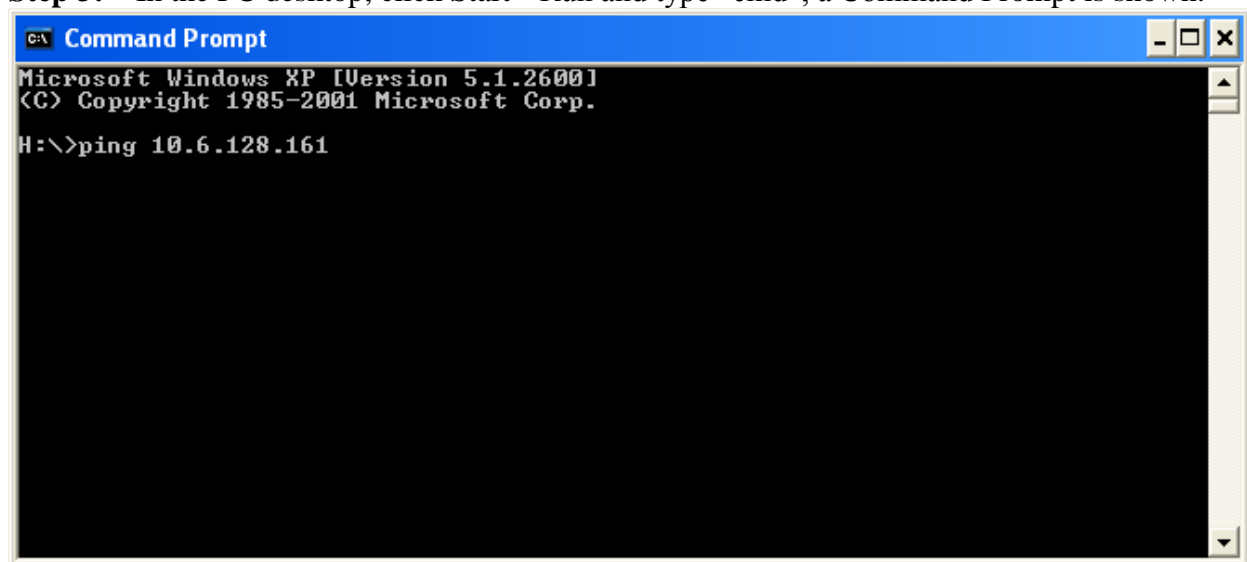
*Figure 2: Example of AWMS subsystems in different computers*

#### 3.1 TEST CONNECTIVITY

**Step 1:** Configure the AWMS PC and A8 according to the above figure.

**Step 2:** Connect the PC to A8 with a cross-Ethernet cable.

**Step 3:** In the PC desktop, click Start->Run and type “cmd”, a Command Prompt is shown.



*Figure 3: Windows command prompt*

**Step 4:** In the Command Prompt, type “ping 10.6.128.161”

If there is no ping response from the A8, please check your configurations. Otherwise, you can progress to next section.

### 3.2 START AWMS

#### 3.2.1 Start AWMS Servers

You can start AWMS Central Control Server and AWMS Proxy by separately clicking their icons on the Windows Menu.

*NOTE: You should start AWMS Central Control Server and AWMS Proxy separately if they are installed on different hosts.*

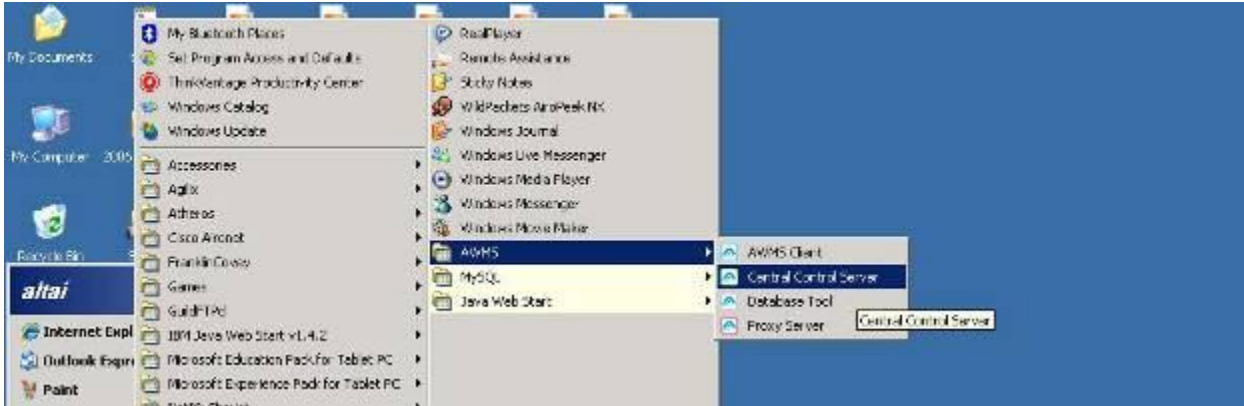
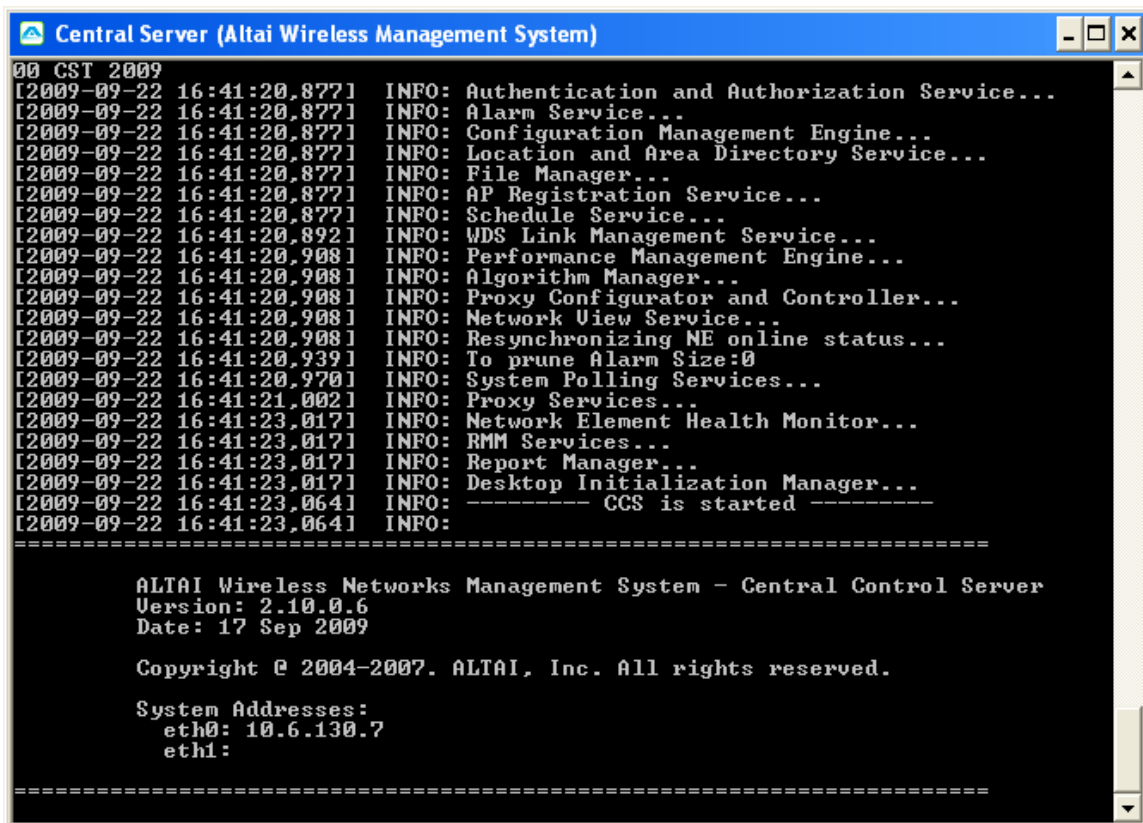


Figure 4: Start AWMS Servers from Windows Start Menu

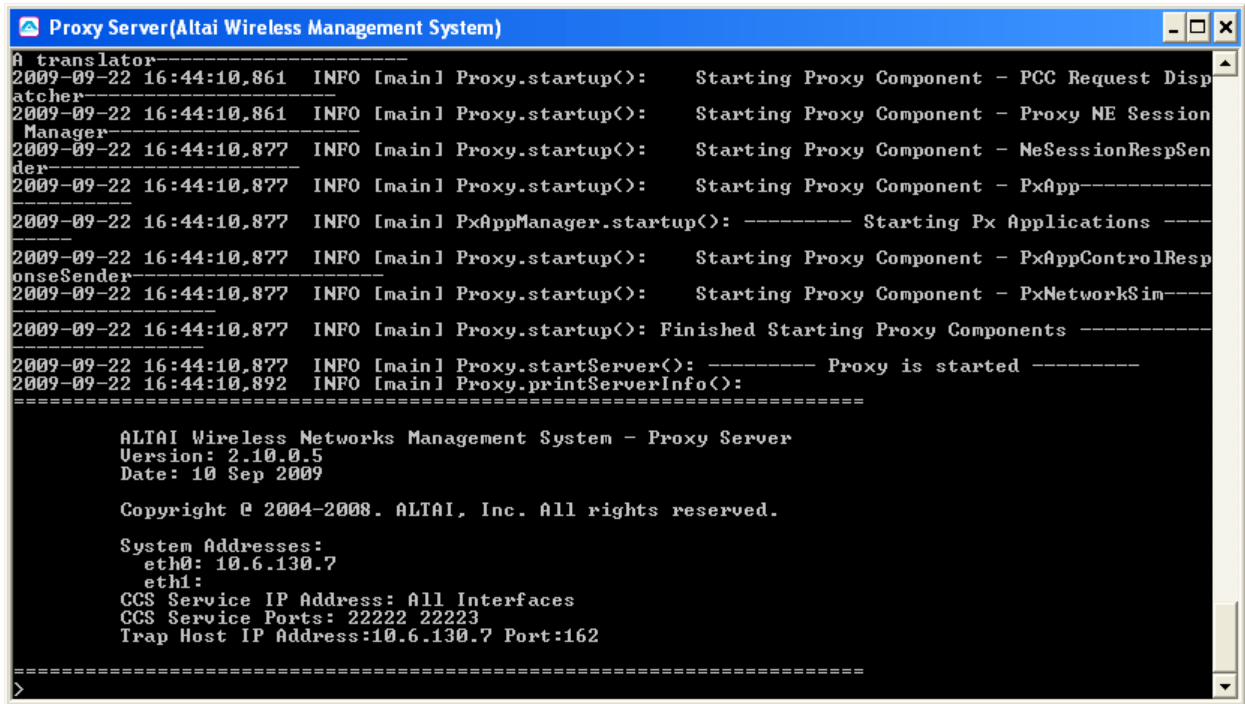
Two consoles shows up when AWMS servers are starting. One of them is for AWMS CCS and another is AWMS Proxy.

You should see “----- CCS is started -----” when AWMS CCS has successfully started up.



**Figure 5: AWMS CCS console**

You should see “----- Proxy is started -----” when AWMS Proxy has successfully started up.



**Figure 6: AWMS Proxy console**

### 3.2.2 Start AWMS Client

Start AWMS Client by clicking its icon. The AWMS Client will start with the login prompt asking you for AWMS login name and password.



**Figure 7: AWMS Client user login interface**



The default login name is “root” and password is “ims”.  
 After you successfully login, you will see the AWMS main window.

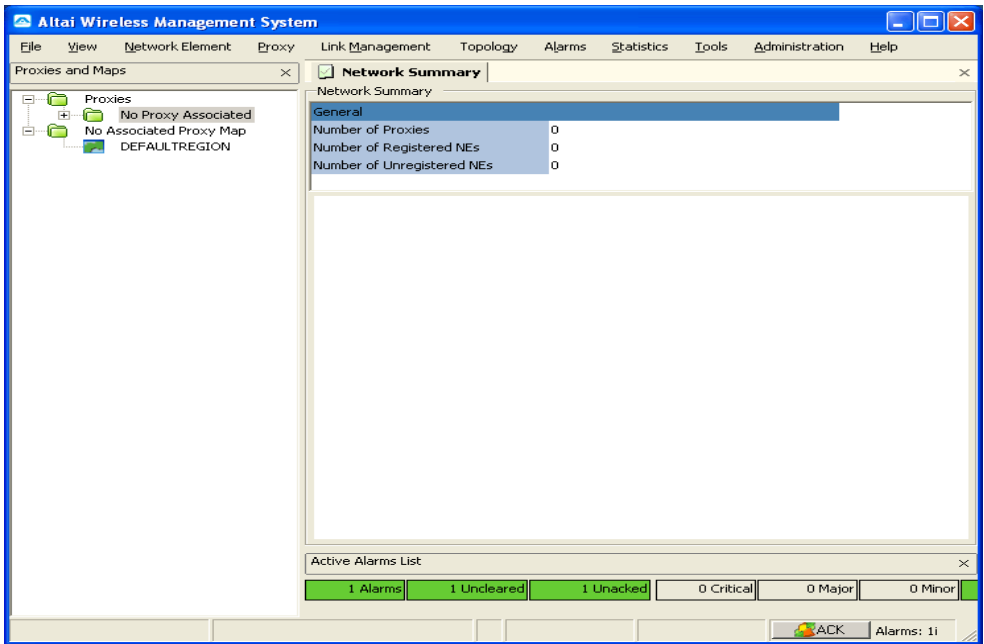


Figure 8: AWMS GUI main window

### 3.3 GUI LAYOUT INTRODUCTION

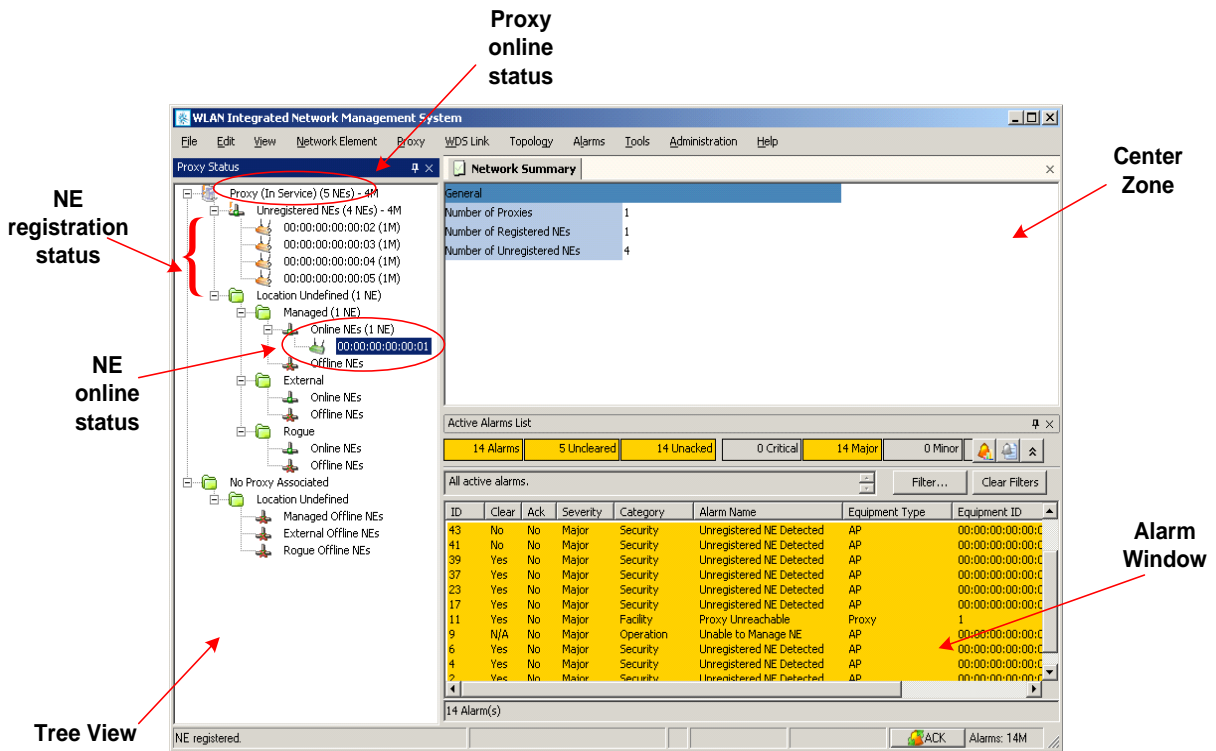


Figure 9: Layout of AWMS GUI main window

### Tree View

- Show the association among Proxies, NEs and maps
- Show different statuses (i.e. registration, online/offline, provisioning) of NE and Proxy
- The available tree views include **Proxy Tree**, **NE Registration Tree** and **Provision Status Tree**.

### Center Zone

- This window displays the forms for all the operations. E.g. **NE Configuration**, **Proxy Registration**, **Map Setting**, .....etc.
- The default display in the main window is the **Network Summary**, which shows the number of Proxies and NEs recognized by AWMS.

### Alarm Window

- This window shows two lists of alarms stored in the system: **Active Alarm List** and **Alarms History**.
- The default alarm list displayed is the **Active Alarm List**, which is a list of alarms that are not cleared and/or not acknowledged.
- **Alarms History**, a list of alarms that are both cleared and acknowledged

More details on alarm management with AWMS are described in section **Error! Reference source not found.**

## 3.4 PROXY REGISTRATION, NE REGISTRATION & NE DISCOVERY

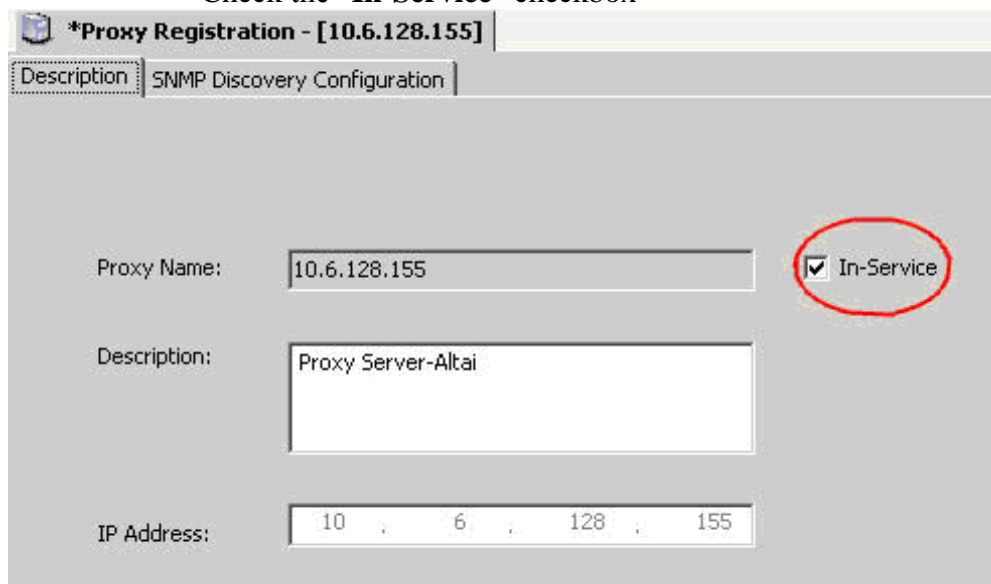
### 3.4.1 Proxy Registration

Network elements managed by AWMS have to connect to one of the registered proxies which are responsible for discovering network elements. Therefore, there must be at least one registered proxy.

**Step 1:** In Menu bar, **Proxy** → **Add New Proxy**

**Step 2:** The **Proxy Registration** form comes up. Please enter:

- Proxy Name (Chinese Supported)
- A brief description for this proxy (Chinese Support)
- IP address of the Proxy
- Check the “**In-Service**” checkbox



\*Proxy Registration - [10.6.128.155]

Description: SNMP Discovery Configuration

Proxy Name: 10.6.128.155  In-Service

Description: Proxy Server-Altai

IP Address: 10 . 6 . 128 . 155

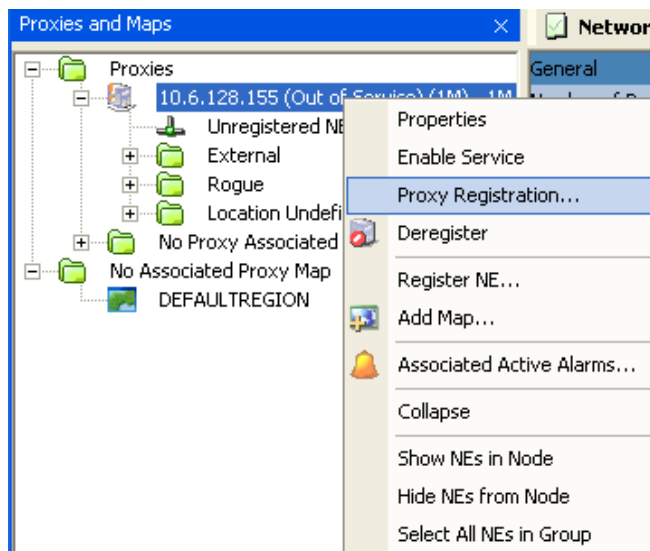
**Figure 10: Proxy Registration window**

**Step 3:** Click the “**Save**” button to save all the configurations and click the “**Close**” button to finish proxy settings.

### 3.4.2 NE Discovery

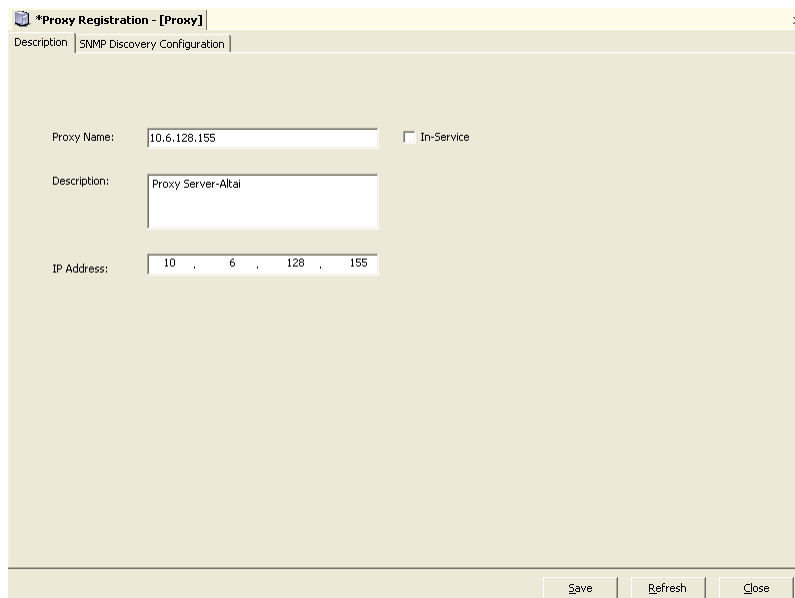
AWMS supports network element auto-discovery by SNMP sweeping. Discovery can be done to discover both registered and unregistered network elements. The discovery settings can be configured in the **Proxy Registration** window.

**Step 1:** In **Proxies and Maps Tree**, select the proxy that you would like it to do the discovery. Then right click and select **Proxy Registration...** in the right click menu. (In this example, select “Proxy”. This is the only registered Proxy in our case)



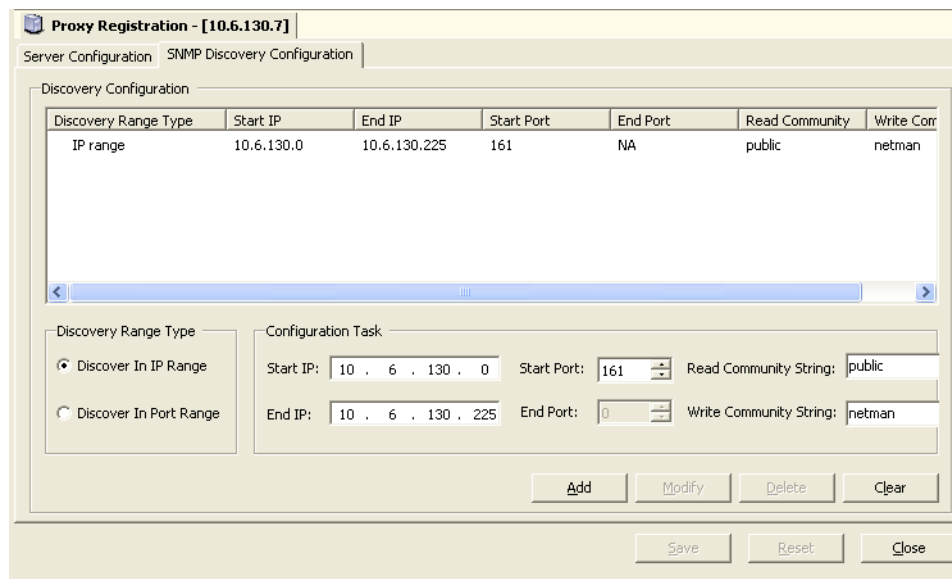
**Figure 11: Open Proxy Registration window**

**Step 2:** Discovery settings cannot be modified when the proxy is in service. Therefore, we need to put it out of service first. When the **Proxy Registration** window comes up, uncheck the “**In-Service**” checkbox and click “**Save**” button.



**Figure 12: Disable proxy service for NE discovery**

**Step 3:** Switch to the SNMP Discovery Configuration tab:



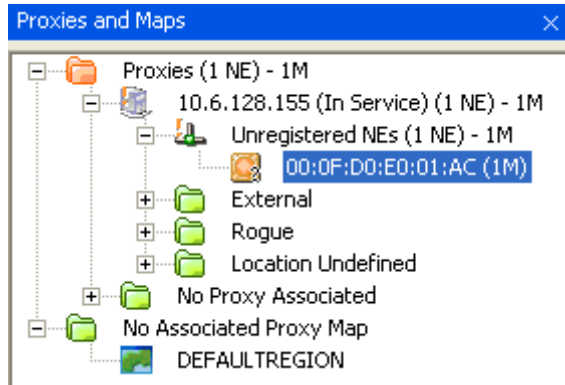
**Figure 13: SNMP Discovery Configuration window**

- Check the “SNMP Discovery Enabled” option
- For example, in the text boxes in the Configuration Task section, fill in:
  - Start IP: 10.6.130.0
  - End IP: 10.6.130.225
  - Subnet Mask: 255.255.255.0
  - Read Community: public
  - Write Community: netman
  - Port: 161
- Click the “**Add**” button
- (Note: if there are more IP ranges to fill in, repeat this step until all desired IP ranges have been added).

**Step 4:** Click the “**Save**” button to save all the configurations and click the “**Close**” button.

**Step 5:** Put the registered proxy in service.

**Step 6:** The discovery is performed periodically every 60 seconds. When unregistered NEs are discovered, they will be shown in **Unregistered NEs** section on the GUI. When registered NEs are discovered, AWMS tries to manage the NEs which will then be shown as **Managed** (refer to section 6.1.2).



**Figure 14: Unregistered NE shown in Proxies and Maps Tree**

If the administrator wishes to manage a NE, he/she needs to register the NE as **Managed** in advance.

Apart from being registered as **Managed**, a NE can be registered as **External** or **Rogue**:

*a) Registering as External*

If an NE is registered as **External**, that means the NE is detected by AWMS in the network but is outside your management scope. In terms of operation, AWMS users can edit its registration information; view its associated alarms and NE summary.

*b) Registering as Rogue*

If a NE is registered as **Rogue**, that means an NE, supposed not to be in the network, is detected by AWMS. AWMS users can also edit its registration information and view its associated alarms and NE summary.

## 3.5 NE MANAGEMENT AND CONFIGURATION & PROVISIONING

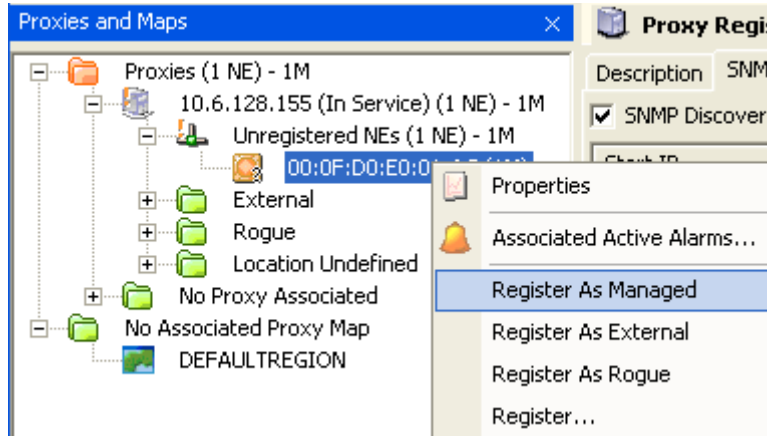
### 3.5.1 NE Management & Online State Concept

- **Registered:** NE is registered in AWMS as Manage, External or Rogue.
- **Unregistered:** NE is online and is discovered by AWMS but not yet registered.
- **Online:** AWMS is connecting to the NE.
- **Offline:** AWMS is not connected to the NE.
- **Loss of Communication:** AWMS has established a connection to the NE, but which does not respond to the requests from AWMS.

### 3.5.2 Manage an Unregistered NE

A NE remains offline until it is discovered and its configuration can be retrieved by AWMS successfully. Moreover it can be managed after it is registered as **Managed**. So you can not manage an unregistered NE.

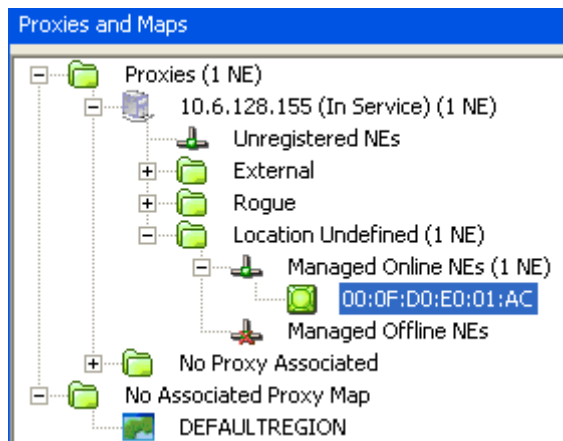
**Step 1:** To register a NE as **Managed**, right click on the desired unregistered NE, and choose **Register as Managed**.



**Figure 15: Register a NE as Managed**

(NOTE: The AWMS users can also select multiple unregistered NEs and use the **Register as Managed** option to perform a mass operation on all selected NEs)

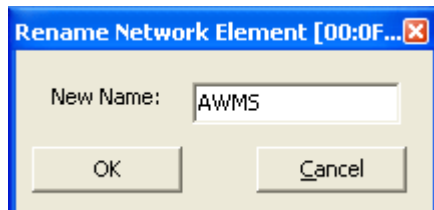
The NE will become registered as **Managed** and is shown under **Location Undefined** → **Managed** → **Online NEs**.



**Figure 16: An unregistered NE becomes Managed**

**Step 2:** To rename the registered NE, right click the registered NE from the pull down menu and choose **Rename...**

Enter in a new name (a Chinese name is supported here) for the NE, and click “**OK**” button.



**Figure 17: Rename a Managed NE**

### 3.5.3 Configuration & Provisioning Concept

- **NE Configuration:** The configuration that AWMS user wants to provision to a NE.
- **Current Configuration:** The configuration of a NE that is currently taking effect.
- **Provisioning:** A process in which AWMS transfers a set of NE configurations to a NE such

that the new configuration will take effect in the NE after this process.

- **Provision Pending:** NE is managed but its NE configuration settings shown by AWMS are different from its Current Configuration status (i.e. it has not been provisioned by AWMS).
- **Re-provision Pending:** The NE Configuration of a NE has been changed after being provisioned.
- **Active in Provisioning:** AWMS is currently in the process of provisioning a NE.
- **Provisioned:** NE has been provisioned by AWMS successfully in the last attempt.
- **Provision Failed:** AWMS has failed to provision a NE in the last attempt.

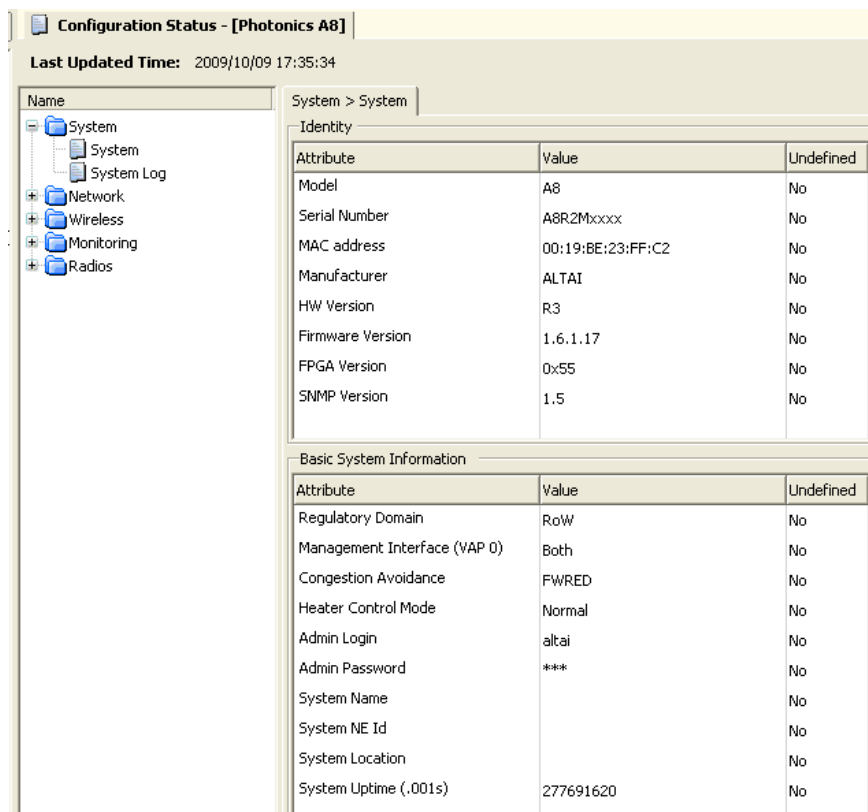
### 3.5.4 View Current Configuration

**Step 1:** Right-click the targeted NE and choose **Current Configuration...**

**Step 2:** The Configuration Status form will show up

The configuration settings are broken down into different groups which include:

- **Radios and Virtual APs:** Radio parameters, VLAN, WEP and 802.11g settings...etc
- **System:** Admin login, IP address, subnet mask and gateway address...etc
- **NTP settings:** Enable/disable NTP and modify NTP server IP...etc
- **DNS settings:** Set primary DNS IP...etc
- **DHCP settings:** Enable/disable DHCP, set DHCP relay and DHCP pool
- **PPPoE settings:** Enable/disable PPPoE, set user name & password...etc
- **Telnet settings:** Enable/disable telnet and SSH
- **NAT settings:** Enable/disable NAT, set local IP & IP mask...etc



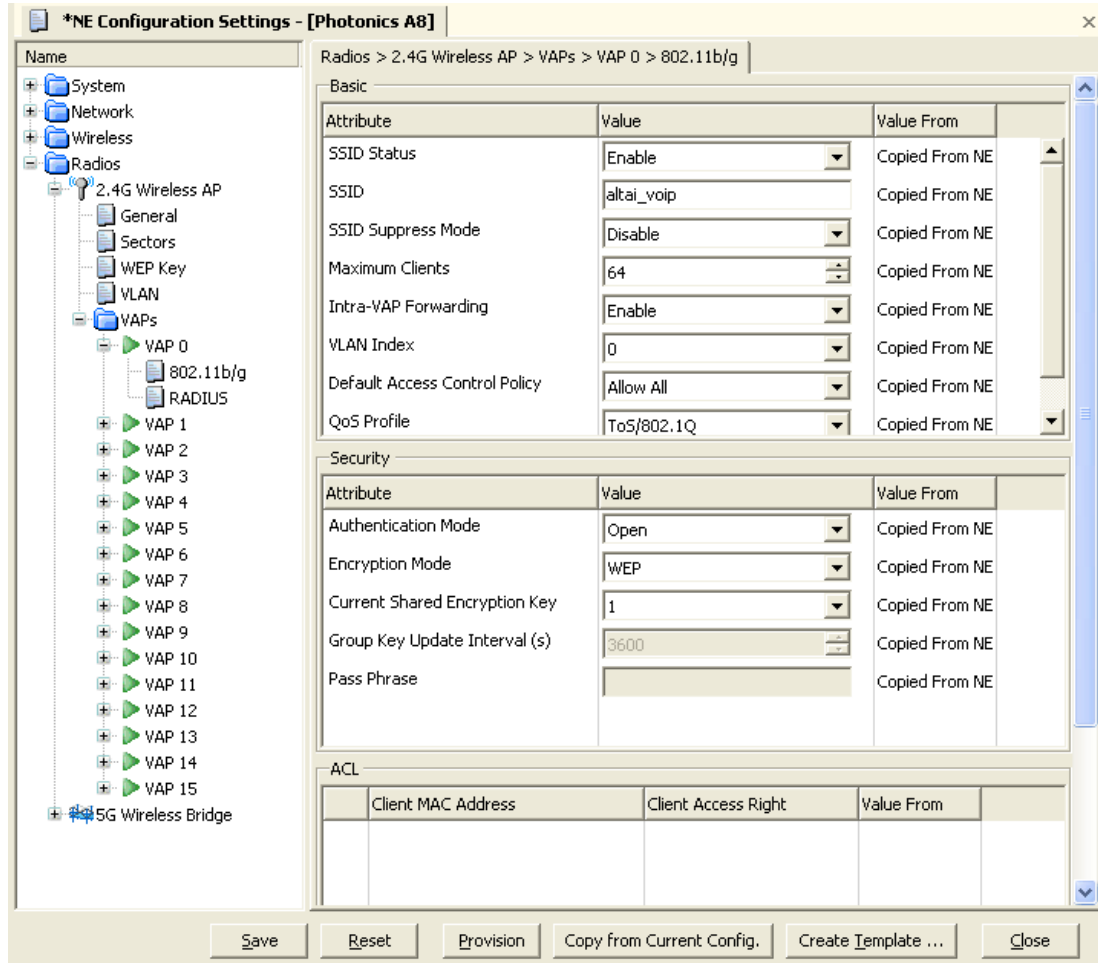
**Figure 18: Current Configuration Status window**

You can click the **“Refresh”** button to refresh the current NE settings from NE.

### 3.5.5 NE Configuration

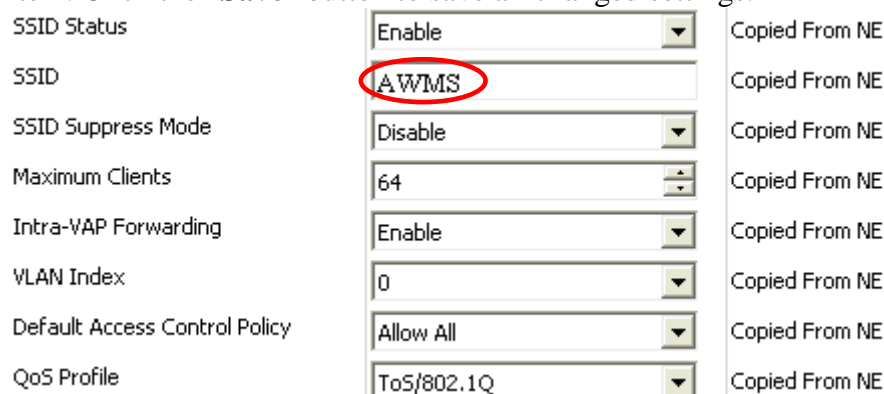
**Step 1:** Right-click the NE that you want to modify its configuration and choose **NE Configuration...**

**Step 2:** The **NE Configuration Settings** window will be displayed.



**Figure 19: NE Configuration window**

**Step 3:** Let us take an example to modify the SSID of VAP 0 from “Altai Wireless Network – 0” to “AWMS”. Upon you change the figure, there is an “\*” sign appearing on the modified item. Click the “Save” button to save all changed settings.



**Figure 20: VAP settings in NE Configuration window**

**Reminder:** After you click the “Save” button, the settings have not been transferred to NE yet.

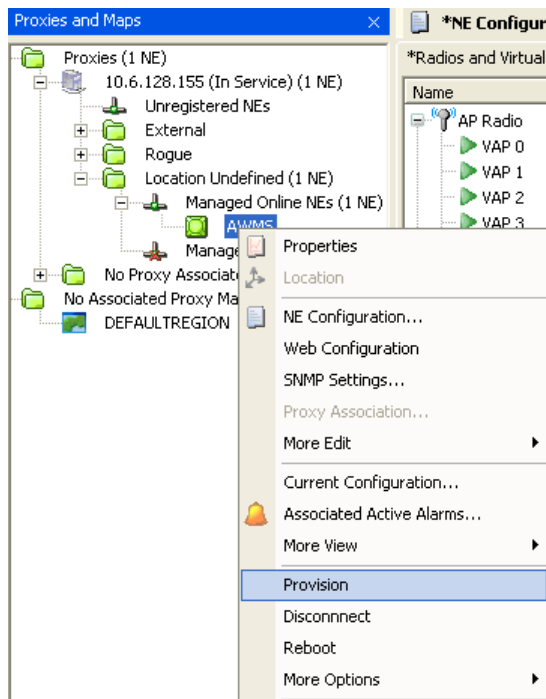


**NOTE:** the **Copy from Current Config.** feature can copy the settings from the **Current Configuration** screen. This feature is useful in managing NEs that are already preconfigured by other means like the CLI. Also, it is recommended to view the current configuration and refresh the current configuration before using **Copy from Current Config.**

### 3.5.6 Provision NE

**Step 1:** Go to **View → NE Provision Status Tree.** (This step is optional, but the **Provision Status** window presents a better view for the provisioning status).

**Step 2:** Choose the target NE to provision. It should appear under **Provision Pending NEs, Re-Provision Pending NEs, Provisioned NEs, or Provision Failed NEs.** Right click and choose **Provision** in the menu. This will provision the settings in the **NE Configuration** to the NE.



*Figure 21: Provision in Proxies and Maps Tree*

**Step 3:** A **Provision Status** bar is showing the progress of provision



*Figure 22: Configuration provisioning*

After provisioning is finished successfully, the **Provision Status** bar disappears.

## 3.6 FAULT MANAGEMENT

This section demonstrates how to handle a active major alarm.

**Step 1:** In the Active Alarms List, double-click your target alarm to look up its details.

Active Alarms List											
13 Alarms		1 Uncleared		13 Unacked		2 Critical		11 Major		0 Minor	0 Info
All active alarms. <span style="float: right;">Filter...</span>											
ID	Clear	Ack	Severity	Category	Alarm Name	Equipment Type	Equipment ID	Al			
37	N/A	No	Major	Operation	NE Firmware Upgrade Failed	AP	AWMS	20			
33	Yes	No	Critical	Facility	NE Loss of Communication	AP	AWMS	20			
29	Yes	No	Critical	Facility	NE Loss of Communication	AP	AWMS	20			
24	Yes	No	Major	Security	Unregistered NE Detected	AP	00:0F:D0:E0:01:AC	20			
22	Yes	No	Major	Facility	Proxy Unreachable	Proxy	Proxy	20			

Figure 23: Active Alarms List

The Active Alarm Details window shows the root cause of the alarm.

**Active Alarm Details**

ID: 37 Event Time: 2007/04/13 17:18:27  
 Alarm Name: NE Firmware Upgrade Failed Alarm Raised Time: 2007/04/13 17:18:27  
 Severity: Major  
 Category: Operation Alarm Cleared Time: N/A  
 Equipment Type: AP  
 Equipment ID: AWMS

**Description:**  
 AWMS Failed to upgrade NE firmware

**Details:**

Name	Value
NE Name	AWMS
NE Type Info	
Model	A8
Number of Radio	2
Operation Mode of Radio	1
Operation Mode of Radio	0
SoftWare Version	1.0
Error Detail	NE Failed to update firmware: Operation timed out <<>>Firmware download has timed o...

Figure 24: Alarm details

**Step 2:** Right click - Acknowledge the alarm.

Active Alarms List											
13 Alarms		1 Uncleared		13 Unacked		2 Critical		11 Major		0 Minor	0 Info
All active alarms. <span style="float: right;">Filter...</span>											
ID	Clear	Ack	Severity	Category	Alarm Name	Equipment Type	Equipment ID	Al			
37	N/A	No	Major	Operation	NE Firmware Upgrade Failed	AP	AWMS	20			
33	Yes	No	Critical	Facility	Synchronize Alarms for Whole Network		AWMS	20			
29	Yes	No	Critical	Facility	Alarm Details...		AWMS	20			
24	Yes	No	Major	Security	Acknowledge		00:0F:D0:E0:01:AC	20			
22	Yes	No	Major	Facility	Acknowledge All		Proxy	20			
16	Yes	No	Major	Security			00:00:0A:06:82:46	20			
18	Yes	No	Major	Security			00:00:0A:06:82:47	20			

Figure 25: Acknowledge an active alarm

After acknowledgement, the alarm is removed from the Active Alarms List.

Active Alarms List								
12 Alarms	0 Uncleared	12 Unacked	2 Critical	10 Major	0 Minor	0 Info		
All active alarms.								Filter...
ID	Clear	Ack	Severity	Category	Alarm Name	Equipment Type	Equipment ID	Al
33	Yes	No	Critical	Facility	NE Loss of Communication	AP	AWMS	20
29	Yes	No	Critical	Facility	NE Loss of Communication	AP	AWMS	20
24	Yes	No	Major	Security	Unregistered NE Detected	AP	00:0F:D0:E0:01:AC	20
22	Yes	No	Major	Facility	Proxy Unreachable	Proxy	Proxy	20

Figure 26: Removal of the target alarm from the Active Alarms List

Remark: Different types of alarms has corresponding handling procedures, please refer to AWMS Configuration Manual for more details on this.

### 3.7 NETWORK MAP MANAGEMENT

A Network Map allows a AWMS user to define the location of NEs and hence he/she can locate where the NEs are. AWMS supports outdoor maps with GPS co-ordination system and indoor maps.

#### 3.7.1 Define a new map

**Step 1:** In Menu bar, select **Topology** → **Add Map...** to open the **Create Map Wizard** and enter the following information:

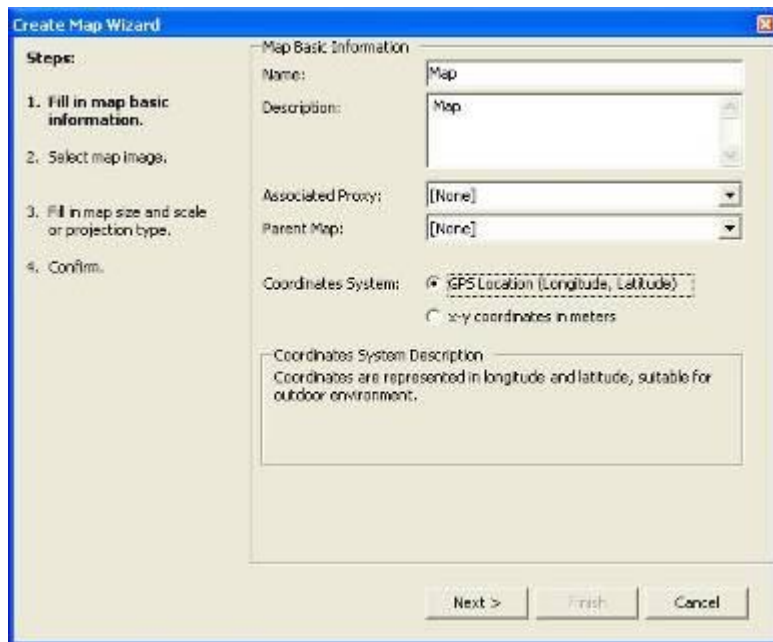


Figure 27: Create Map Wizard

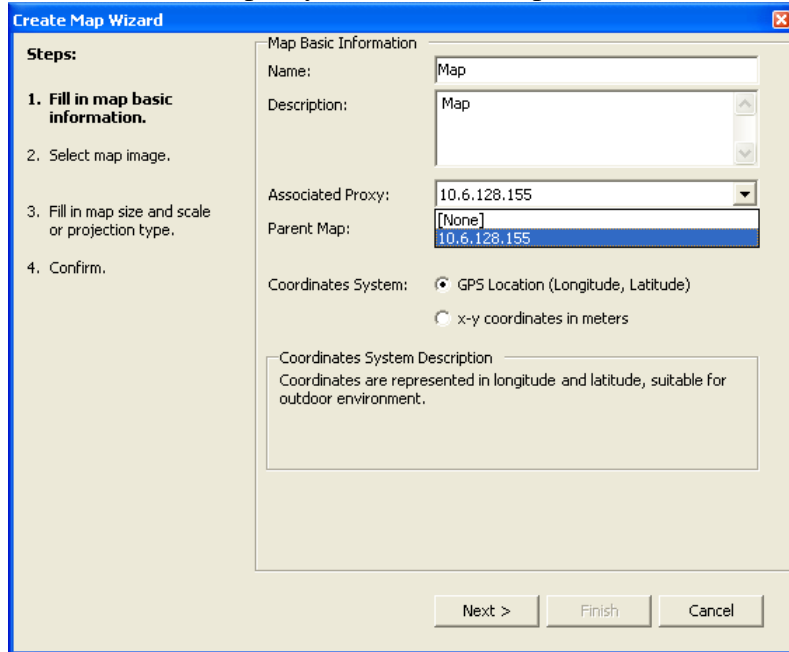
- Name
  - Chinese is Supported
- Description
  - Chinese is Supported
- Coordinates System
  - There are 2 coordinates systems: **GPS Location (Longitude, Latitude)** and **x-y**

**coordinates in meters**

- **GPS Location (Longitude, Latitude):** it is suitable for maps of outdoor environment.
- **x-y coordinates in meters:** it is suitable for maps of indoor environment.

- Associated Proxy

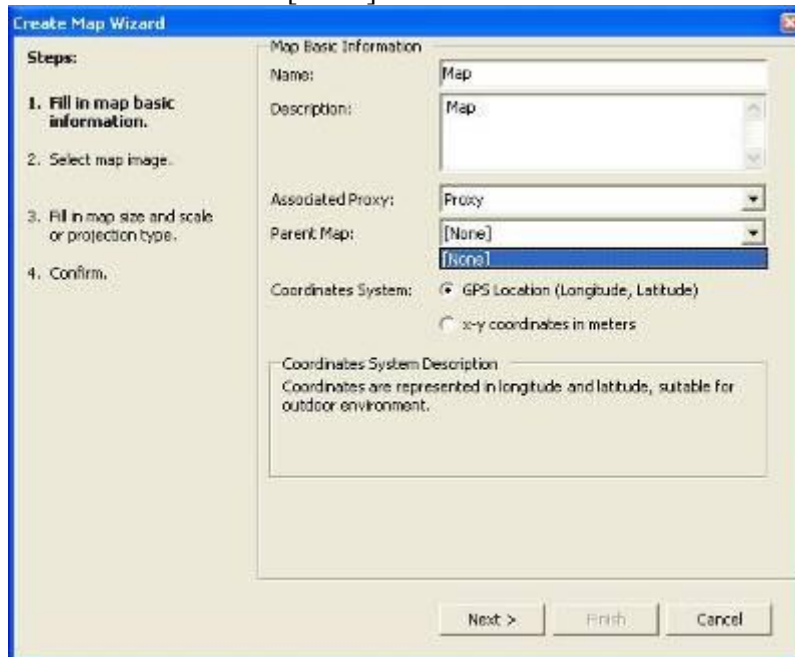
- Select a proxy to which the map is associated. (In this example, we select “Proxy”.)



*Figure 28: Select proxy in Create Map Wizard*

- Parent Map

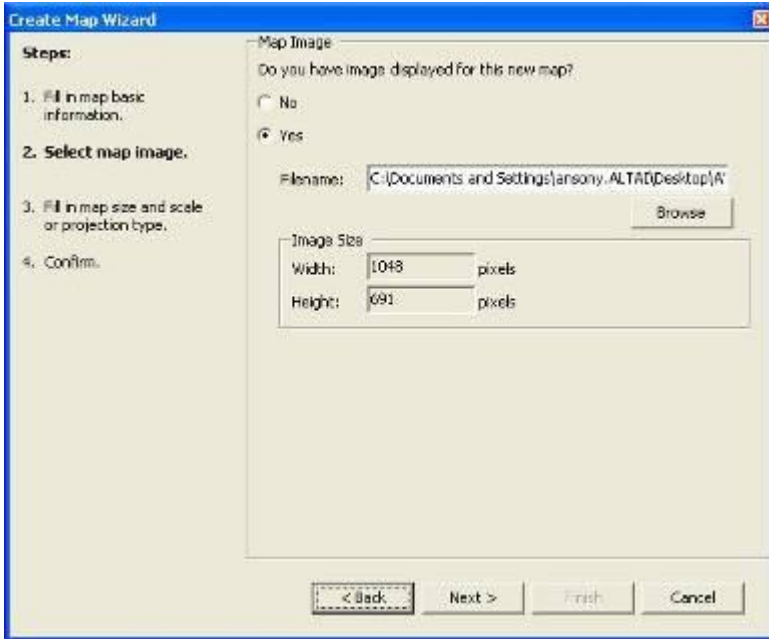
- If there was not map inserted before, the current map should be the parent map and so leave it as “[None]”.



*Figure 29: Select parent map in Create Map Wizard*

**Step 3:** Click the “Next >” button to start image insertion.

**Step 4:** Insert a map image.

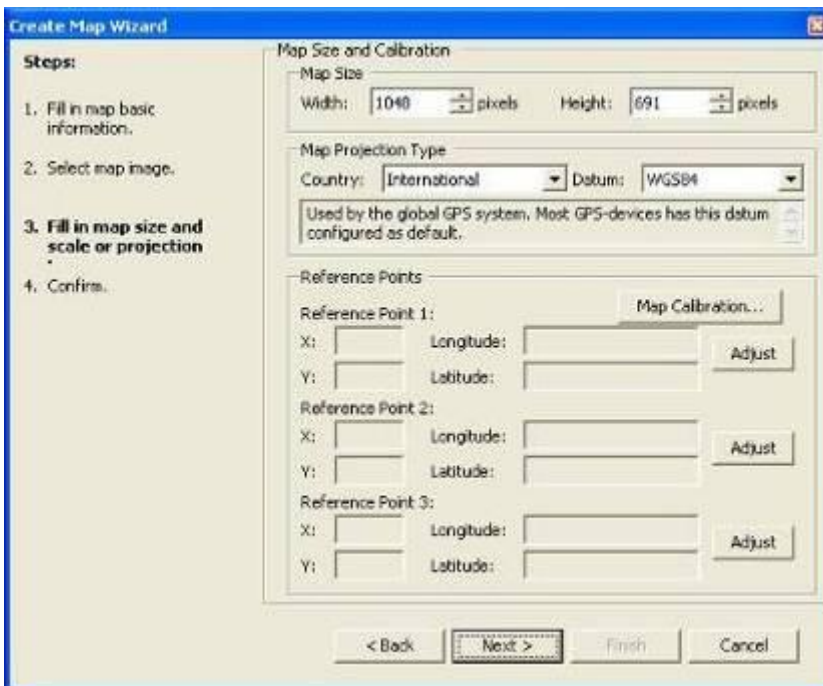


*Figure 30: Insert map image*

- Answer the question “Do you have image displayed for this new map?” by choosing the “Yes” radiobutton.
- To select an image, click the “**Browse**” button.

**Step 5:** Click “Next >”

**Step 6:** Fill in the following information:

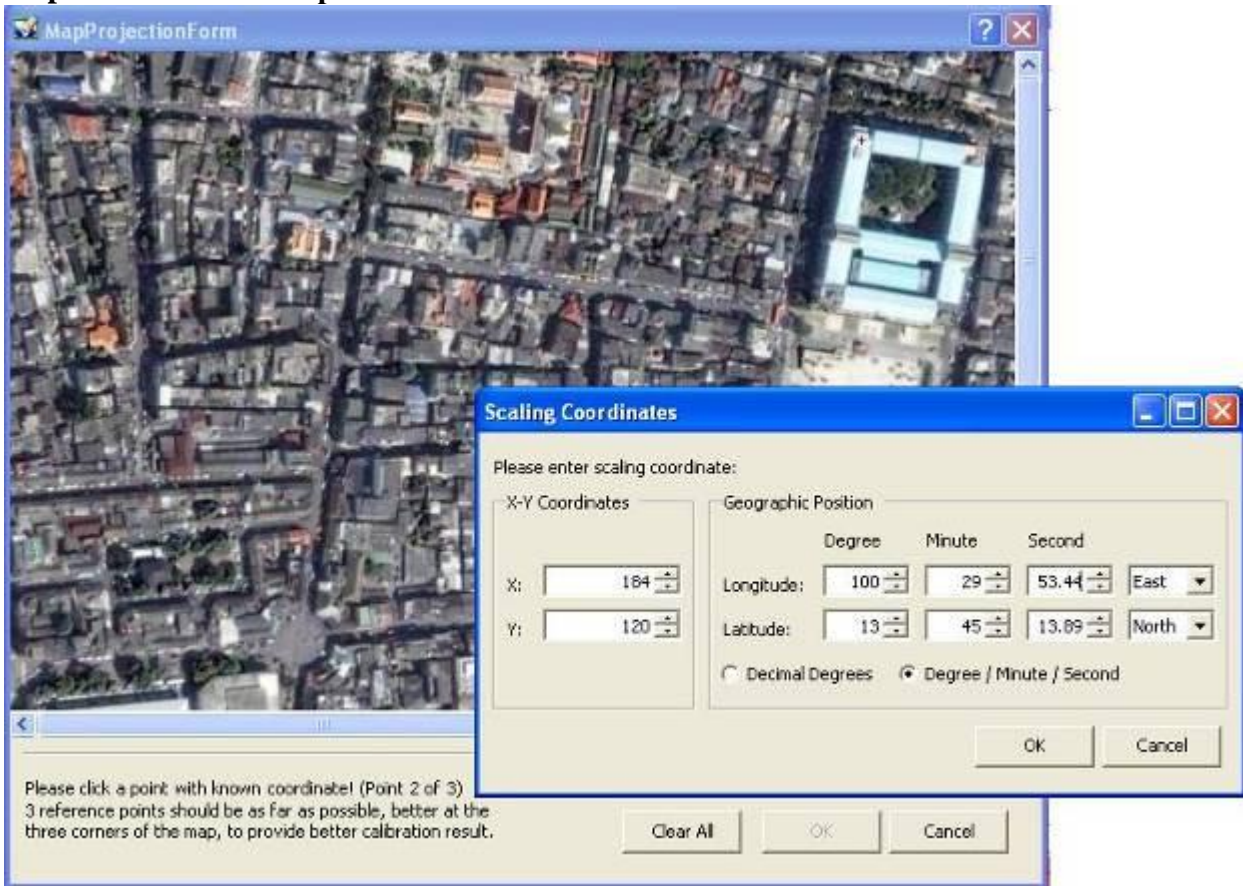


*Figure 31: Map scale and projection*

- Map Size
  - Leave the settings as they are in this example

- Choose the proper **Map Projection Type** from the available choices
  - Choose the proper country options based on what country your map reflects.
  - In case there is no proper choice, it is recommended to choose “International”.

**Step 7:** Click the “**Map Calibration...**” button

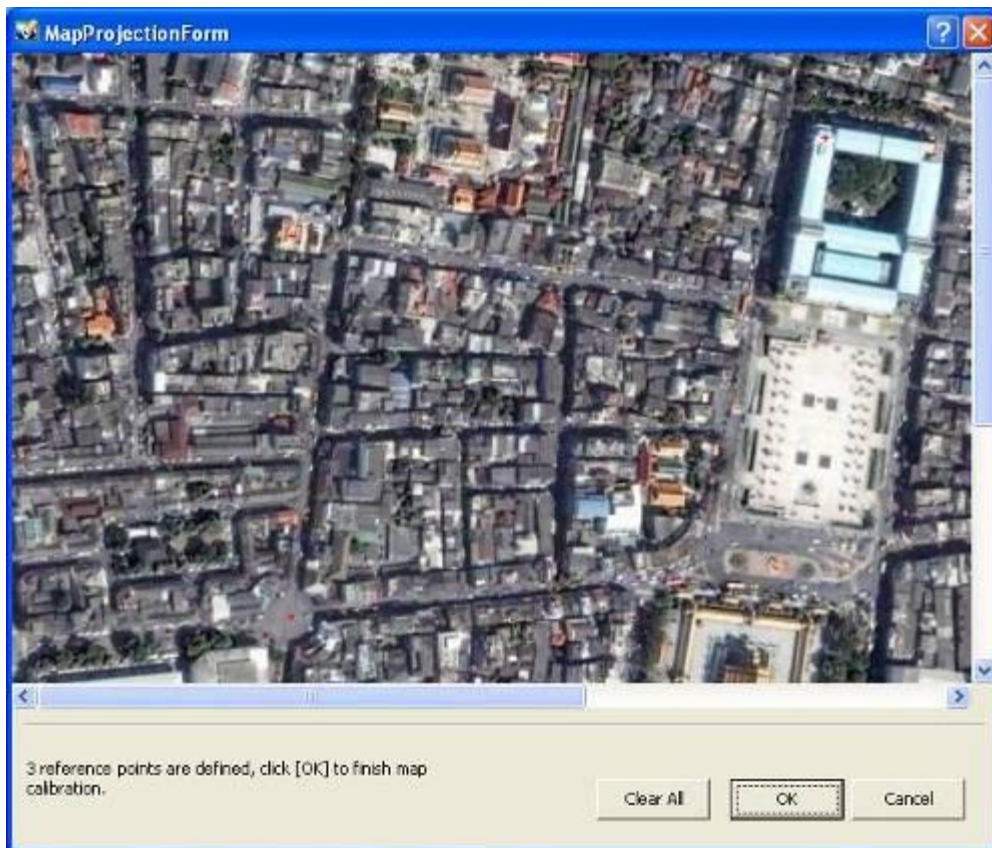


**Figure 32: Map calibration**

Click on a point on the map to enter its actual geographical co-ordinates.

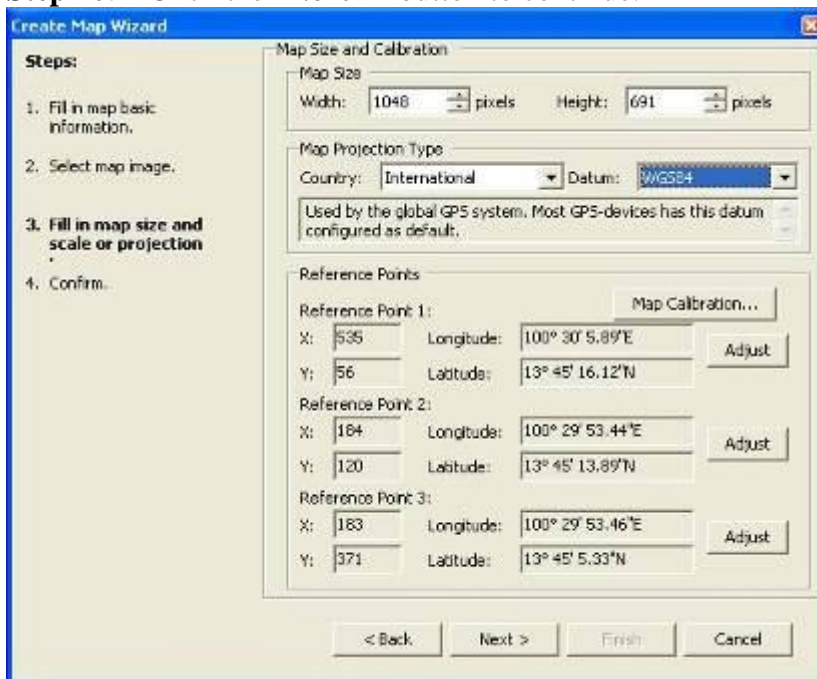
- Adjust the X and Y co-ordinates if necessary
  - No adjustment in this example
- Longitude and latitude co-ordinates can be entered in **Decimal Degrees** or **Degree/Minute/Second** format.
- Click “**OK**” button

**Step 9:** A red cross will appear at the point on the map you just finished entering coordinates for. Repeat steps 7-8 for the other 2 points on the map. Click the “**OK**” button when done.



*Figure 33: A calibrated map*

**Step 10:** Click the “Next >” button to continue.



*Figure 34: Finish map scaling and projection*

**Step 11:** Click the “Finish” button to create the map

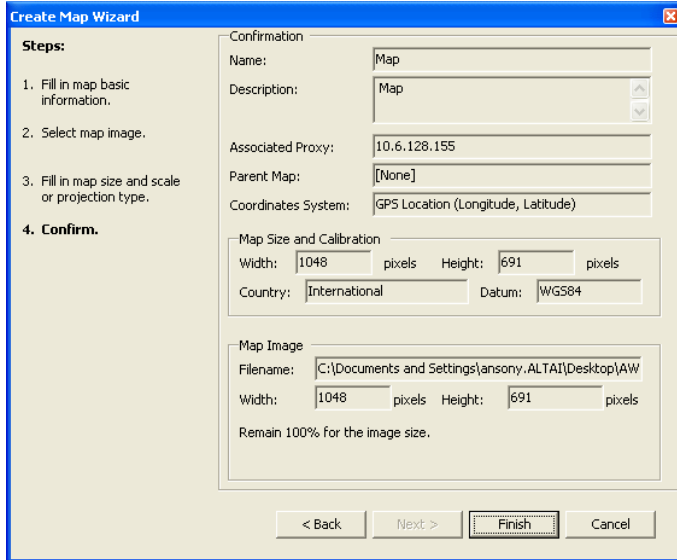


Figure 35: Confirm map creation

**Step 12:** The map can be viewed by double-clicking the map icon in the **Proxies and Maps Tree**.

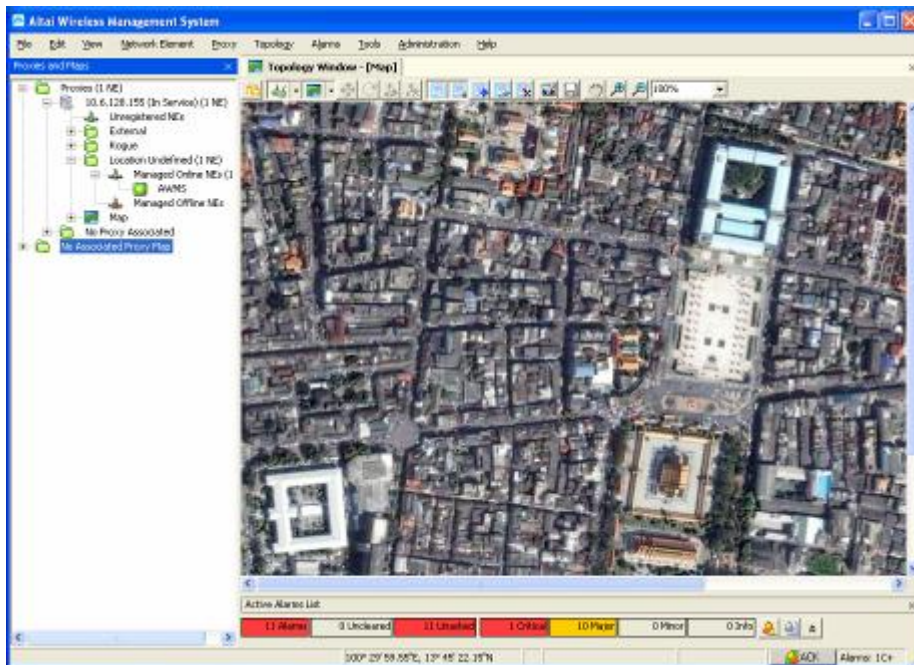


Figure 36: An inserted map in the Topology Window

### 3.7.2 Define NE locations on a map

**Step 1:** On the toolbar in the upper part of the **Topology Window**, click the first button to unlock the inserted map.

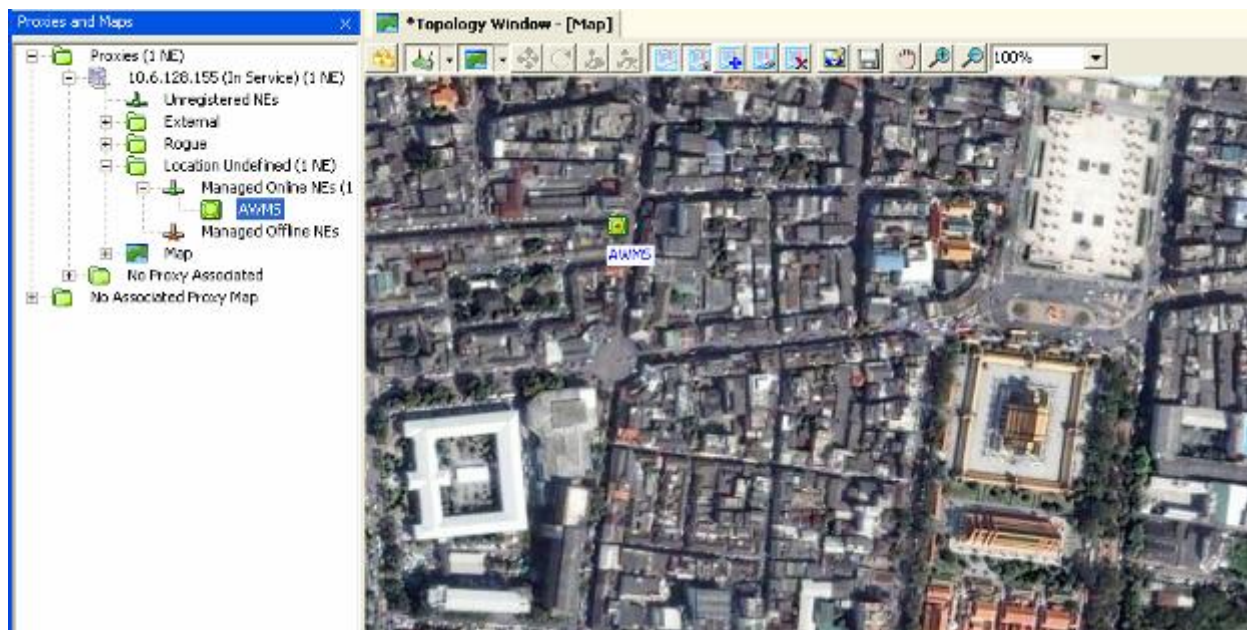


Figure 37: Unlock an inserted map


**Step 2:** Under the same proxy, look for the target NEs under the **Location Undefined** section.



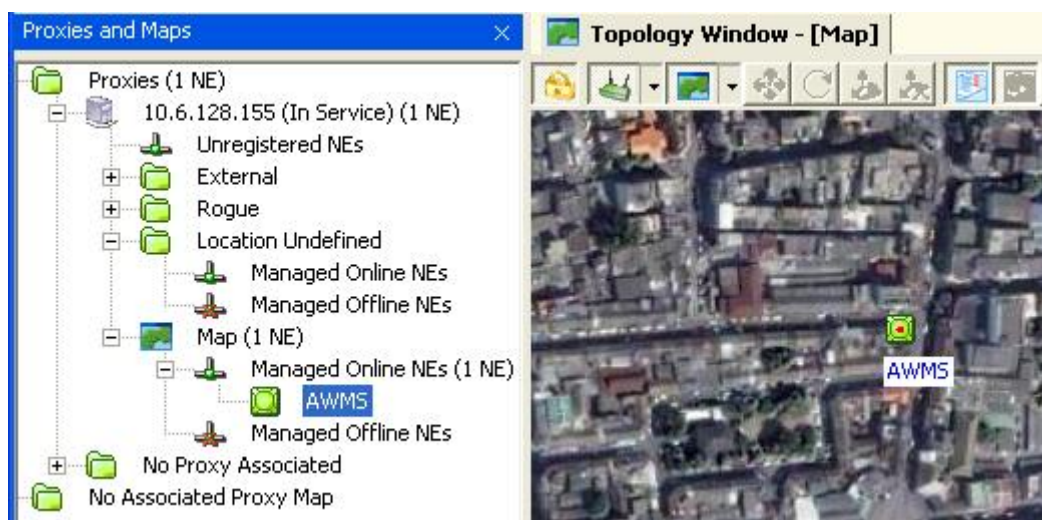
**Step 3:** Drag the NE from the **Proxy Status** window onto the **Topology Window**, and drop it at the desired position on the map. After placing the position, the NE will be shown in the Map. The NE position can be further adjusted by moving the NE within the Map.



*Figure 38: Drag NE to the Topology Window*

**Step 4:** Repeat steps 2-3 until all NEs for the same map are placed. Finally, click the icon  to save the map.

**Step 5:** You will notice the NE groupings in **Proxies and Maps Tree** is changed. The NE that you already dragged to the map is now under the map.



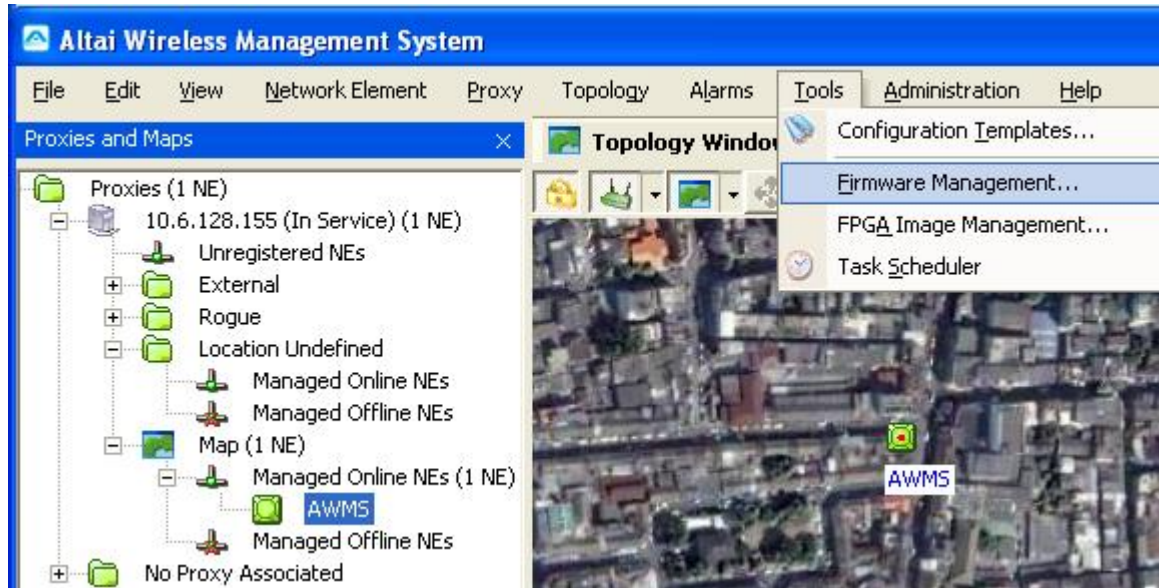
*Figure 39: The dragged NE appears under the map in the Proxies and Maps Tree*

### 3.8 FIRMWARE & FPGA UPDATE

AWMS allows us to do NE firmware update in a scope of a NE or the whole network. Please refer to the following steps to do firmware update.

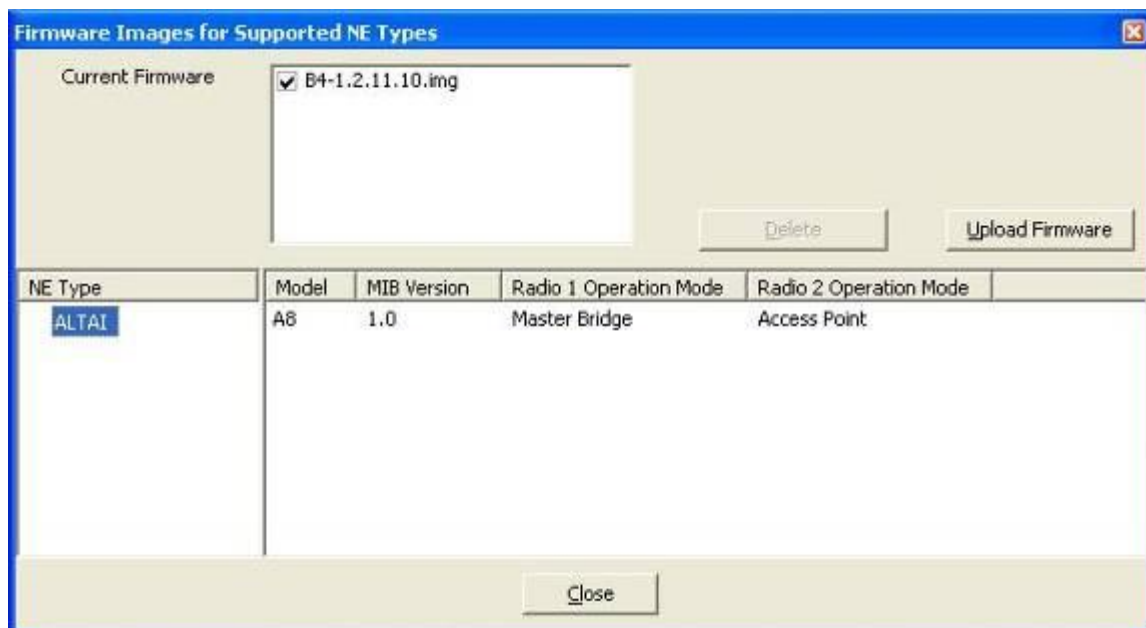
#### 3.8.1 Define a firmware version for firmware update of a NE type

**Step 1:** In Menu bar, go to **Tools → Firmware Management...**



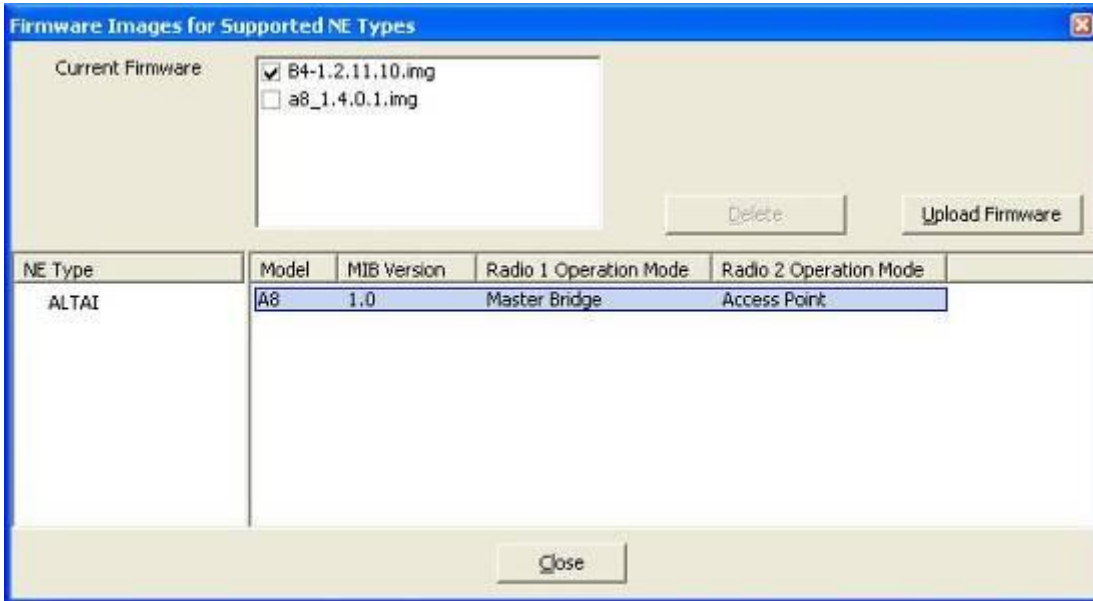
**Figure 40: Firmware Management**

**Step 2:** In **Firmware Images for Supported NE Types** window, highlight the NE type “ALTAI”. The **Current Firmware** section shows what firmware versions are currently included in this NE type.



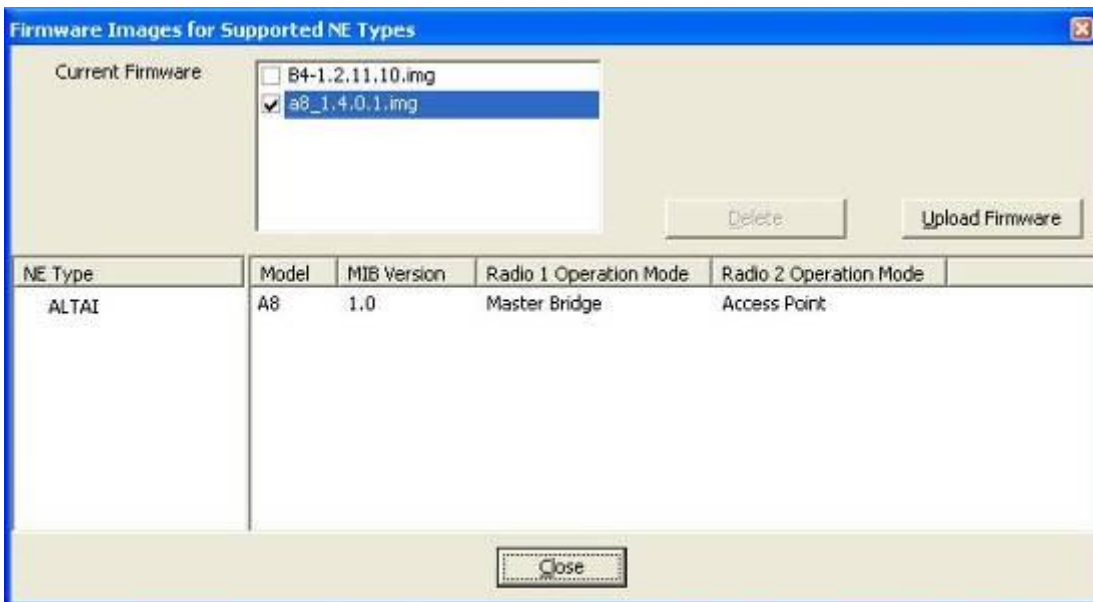
**Figure 41: Firmware Images for Support NE Types window**

**Step 3:** Click the “**Upload Firmware**” button to include your favorite firmware versions into the NE type.



*Figure 42: Include favorite firmware in a NE type*

**Step 4:** Define a firmware version for firmware update of this NE type by selecting the newly added firmware version. Click the “**Close**” button to finish the process.



*Figure 43: Select the favorite firmware for a NE type*

### 3.8.2 Update firmware version for a NE

**Step 1:** In **Proxies and Maps Tree**, highlight and right-click the target NE. Choose **More Options** → **Update Firmware...**

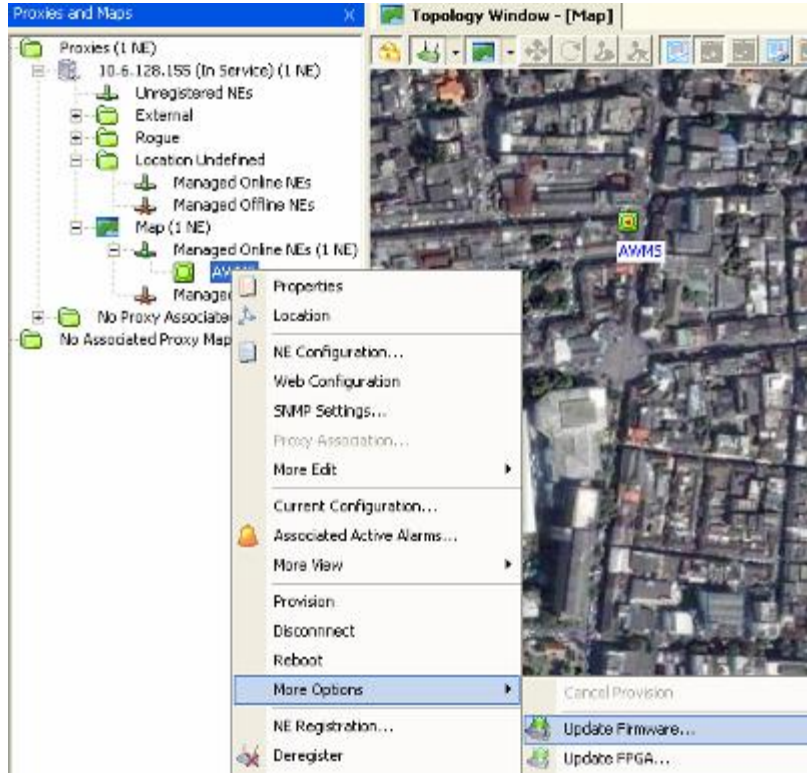


Figure 44: Update a NE firmware

Step 2: Click the “Upgrade” button to start firmware upgrade.

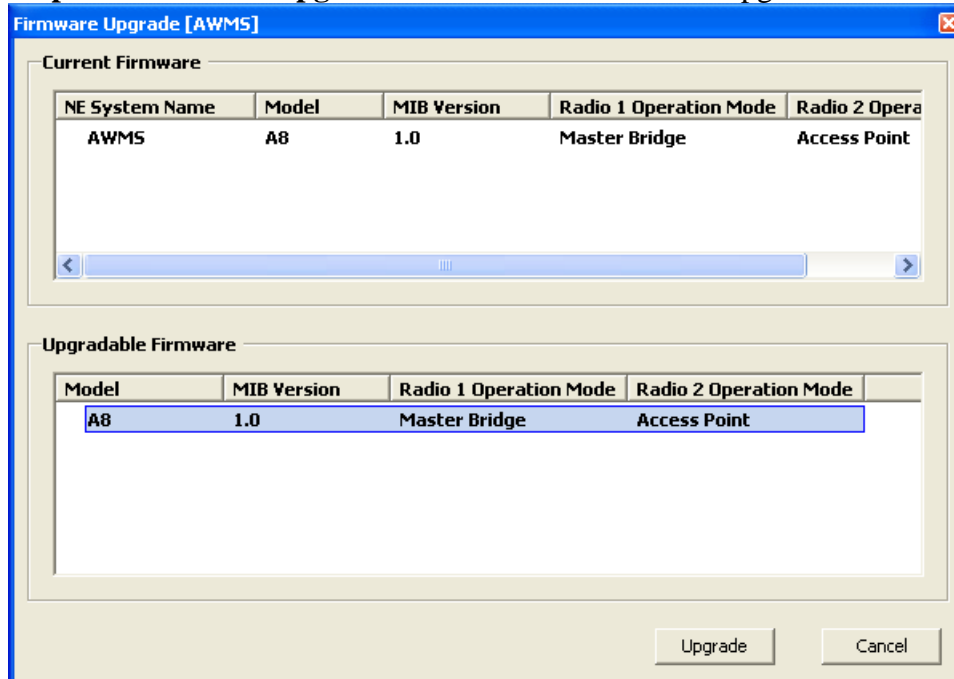


Figure 45: Firmware Upgrade window

Firmware update is in progress.

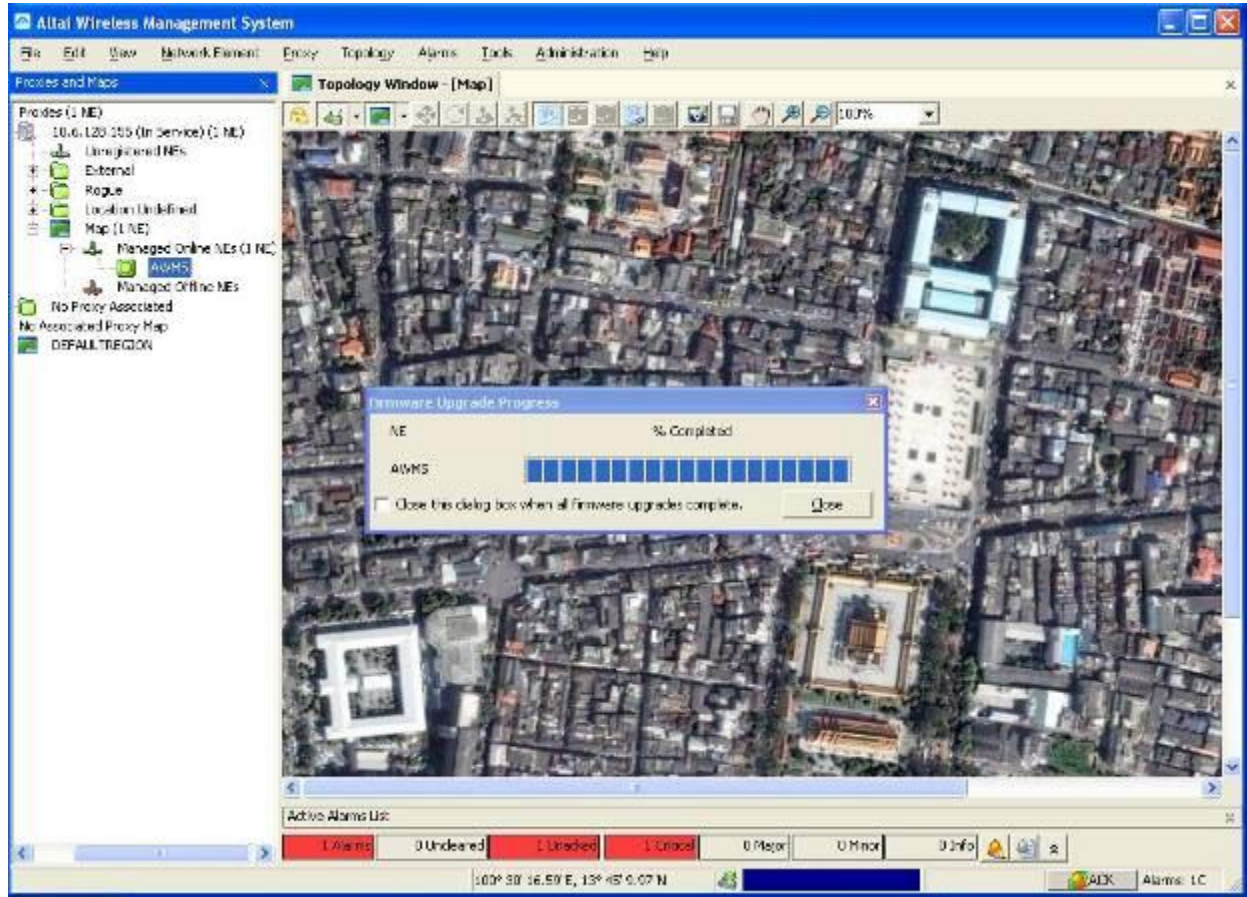


Figure 46: Firmware update is in progress

**Step 3:** Firmware update finished. Click the “OK” button.

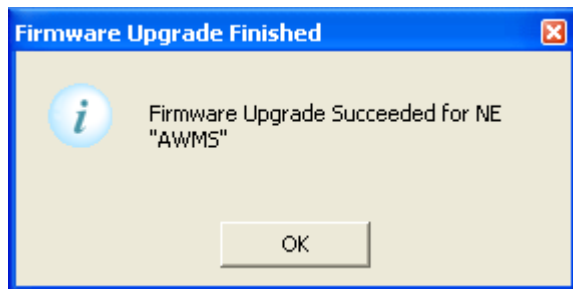


Figure 47: Firmware update finished

### 3.8.3 FPGA Management & Update FPGA version for a NE

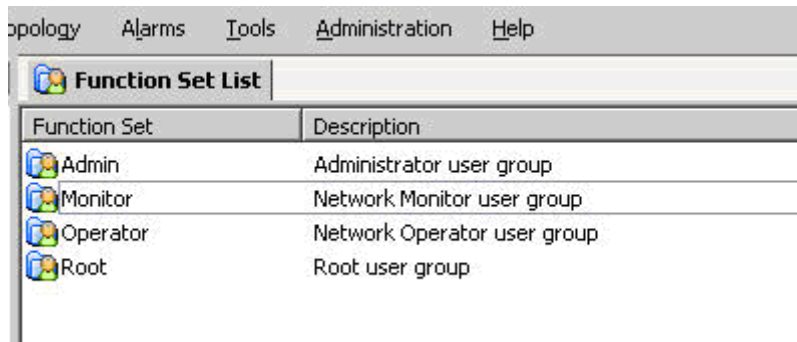
The procedures of FPGA management in AWMS and upgrading FPGA version for network elements are similar to those of firmware. Should you need more details, please refer to the AWMS Configuration Manual.

## 3.9 USER ACCOUNT MANAGEMENT

This section introduces the definition of function sets in AWMS are and demonstrates a procedure how to add a user account for AWMS operation.

### 3.9.1 Function Sets

**Step 1:** Select **Administration->Function Sets...**, users can start managing the function sets.



*Figure 48: Function Sets List*



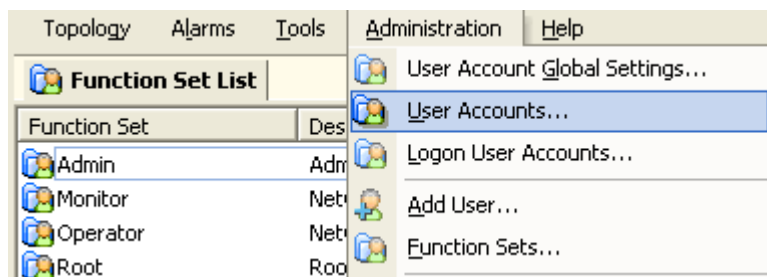
**NOTE:** Any change made on System Security has to be done by Root users or the users have System Security Management access right.

In the Function Set List, there are four defined function sets:

1. **Monitor** users could only monitor the status of the network and acknowledge the alarms.
2. Besides monitoring the network, **Operator** users are allowed to have some levels of access right of configuration.
3. **Admin** users have even higher access right of configuration than Operator users.
4. **Root** users not only have the access right to configure all the settings but also could create new user accounts and function sets.

### 3.9.2 Add a user

**Step 2:** Select **Administration->User Accounts ....**



*Figure 49: Function Sets List*

User Management Interface shows

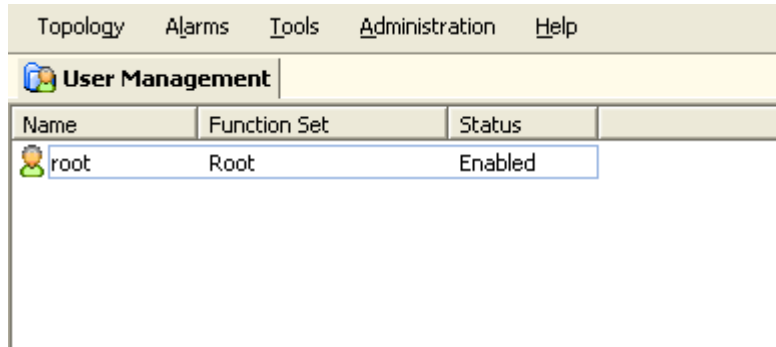


Figure 50: User Management Interface

**Step 2:** Right click anywhere of the User Management interface, select **Add User...** (Alternatively, select **Administration->Add User...**)

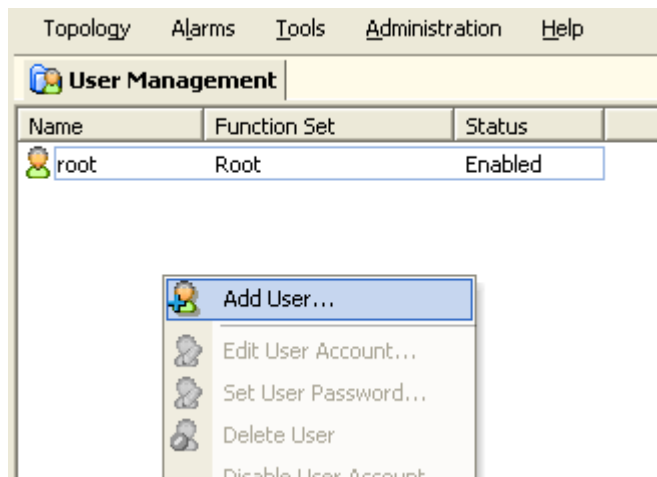


Figure 51: Start adding an AWMS user

The “Register New User” window prompts up.



Figure 52: User Registration Interface

**Step 3:** For example, add a user called “AdminUser” whose function set is “Admin” and password is “password”.

The 'Register New User' dialog box contains the following fields and controls:

- Username:** AdminUser
- Full Name:** AdminUser
- Description:** (empty)
- Password:** \*\*\*\*\*
- Confirm Password:** \*\*\*\*\*
- Function Set:** Admin (selected in a dropdown menu)
- Buttons:** OK and Cancel

*Figure 53: Add user information in the User Registration Interface*

After input, click **OK** to save.

**Step 4:** The created account is shown in the User Management Interface.

User Management			
Name	Function Set	Status	
AdminUse	Admin	Enabled	
root	Root	Enabled	

*Figure 54: A new User is added*