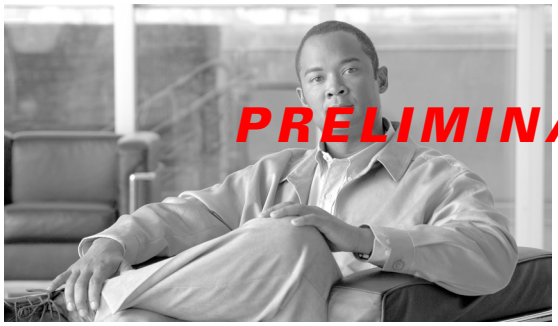

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CHAPTER 7

Commissioning

7.1 Install the Element Management System (EMS)

References:

- *BWX EMS Overview Manual*
- *BWX EMS Software Installation Guide*
- *BWX Mobile WiMAX Configuration Guide*

7.1.1 'Setup the 'Test' EMS

Before installing the EMS software on a local computer, it is a good idea to check the customer's network architecture plan. You should review the plan against the actual setup at the site, checking to see that all equipment and software are installed and available for use. Verify that all routers are installed and IP addresses are correct.

You will need a "test" EMS computer in order to enter some basic configuration data needed to test the system once it is powered on. As an installer, you can either use a laptop computer or the customer's intended EMS Server. (If you use the customer's intended EMS Server, it will be connected through the backhaul, which is a fiber optic connection between the BWX 8415 Basestation (BS) and the service provider's network.)

Typically, in order to keep a constant link, a 10/100 Base-T Ethernet hub or switch connects the test EMS to the BS Data port using an Ethernet cable. This allows the technician to use the EMS Client to communicate with the EMS Server, which are installed on the same test computer (instructions later in this chapter).

An RS-232 serial cable is then connected between the test EMS and the Console port on the BS. Using standard communication software -- i.e., a terminal emulation program, such as Windows HyperTerm or TeraTerm -- allows the installer to enter basic configuration data at this early stage. The procedure for setting up the communications software is described below.

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7.1.2 Setting Up Direct Communications Software

Step 1 Verify that the fiber optic cable going to the BS is securely connected to the proper port on the backhaul network.

Step 2 Connect an Ethernet cable between the backhaul network and the Ethernet connector on the PC that will be used as the test EMS.

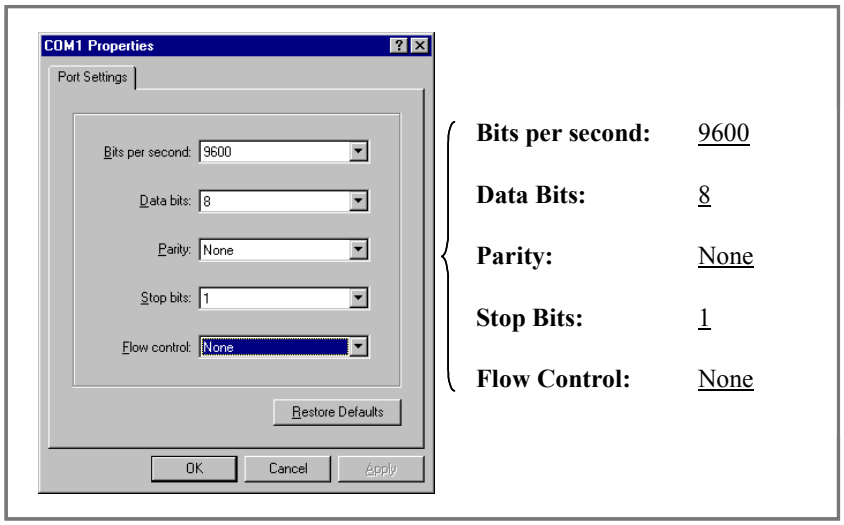
Note A VT 100 terminal or any standard Windows-based ASCII terminal emulation program can be used for connecting to the BS. The connection for HyperTerm is explained here as an illustrative example. The steps to get to the HyperTerm program may be different due to variances between Operating Systems and in the PC setup. There have been cases of extra "garbage" data while using the HyperTerm program. The preferred TeraTerm program can be downloaded free from the Internet.

Step 3 Power on the test EMS Server.

Step 4 On the PC, go to **Start > Programs > Accessories > Communications > HyperTerminal**.

Step 5 In the COM1 Properties window (Figure 7-1), under the Port settings tab enter the configuration options. Click "OK".

Figure 7-1 COM1 Properties



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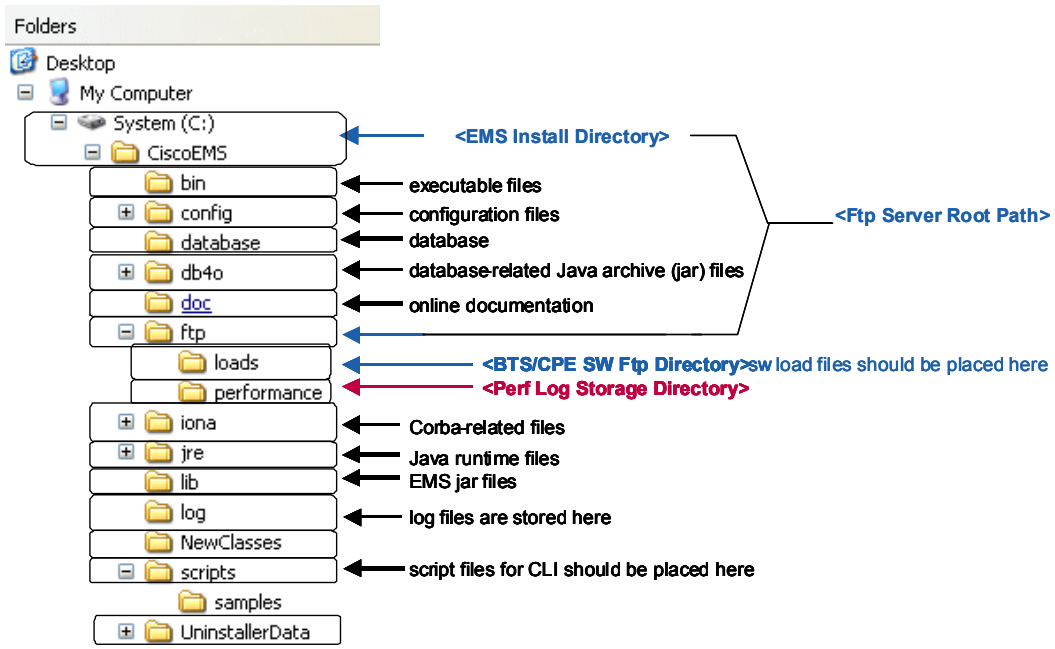
7.1.3 Install the BWX EMS Software and Start & Configure the BWX EMS Server

7.1.3.1 Install the BWX EMS Software

Please refer to the *BWX EMS Software Installation Guide* for minimum computing requirements and instructions to load the software. When you load the EMS software into the *CiscoEMS* directory on the computer, the file structure will look something like what is shown in Figure 7-2. This is a Windows example.

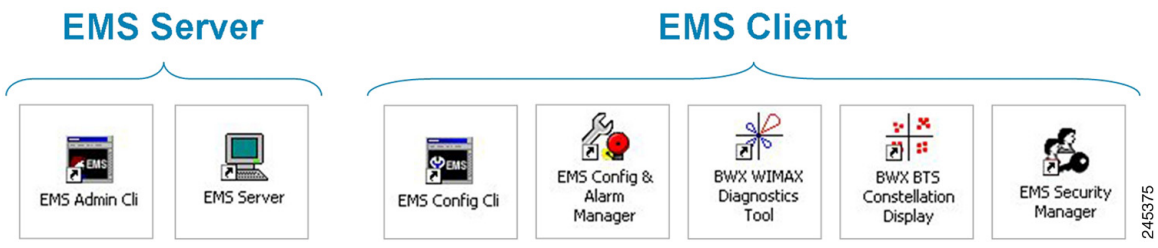
Note This is the directory when you install the Server. The directory when you install the Client is different.

Figure 7-2 BWX EMS Server Software Directory (in a Windows PC)



Be sure to select the correct instructions for your server – based on operating system, either Windows® or Unix®. You will need to install both the Server and Client applications (Figure 7-3). Be sure to check the latest software Release Notes for updated information and procedures for the version of software you are loading.

Figure 7-3 BWX EMS Server & Client Applications



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7.1.3.2 Start the BWX EMS Server

This section assumes that the EMS Server & Client applications have already been loaded. The EMS software installation was described in the previous section. Please refer to the *BWX EMS Software Installation Guide* for detailed instructions on starting the EMS server. The default user name and password are "emsAdmin" (case sensitive). Cisco recommends always changing the default password. Verify the new password requirement with the customer. After the software files have successfully loaded, start the EMS Server by performing the following steps:

Step 1 BEFORE starting the EMS Server, open the EMS Admin CLI application and type ***enable***. After enable is entered, you are prompted for a password. The default password is "*emsAdmin*." The password will be invisible as you type it.

Next, type ***migratedb***. Once the message stating "*Database migration succeeded*" displays, exit EMS Admin CLI.

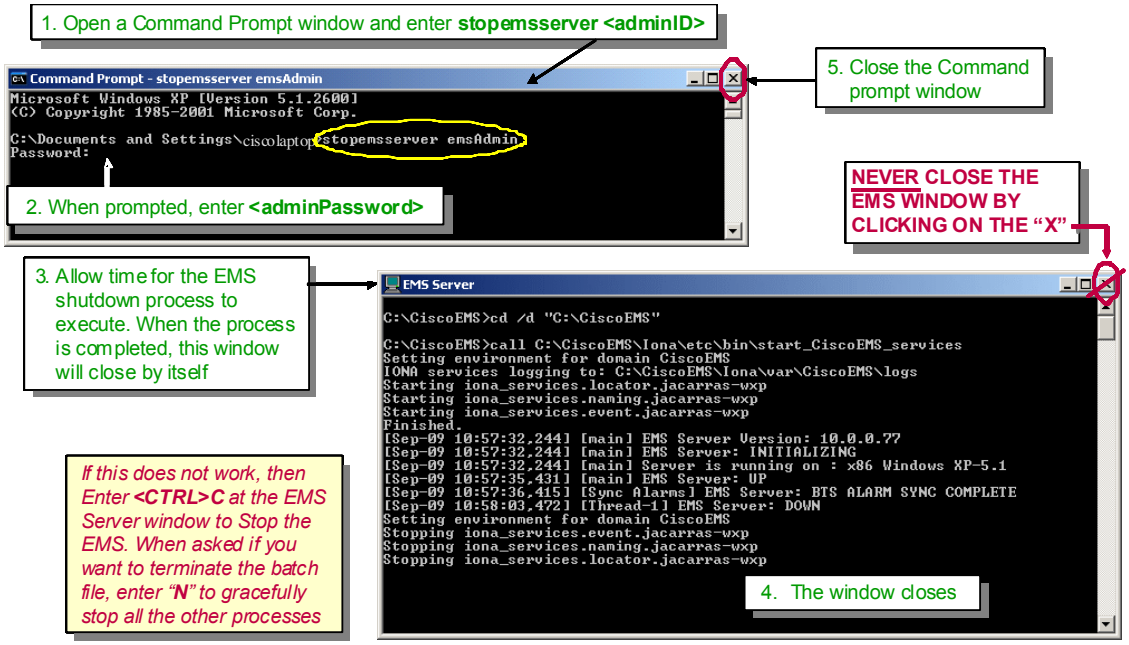
Note If the migration step is run again, you will see the following message: "No Migration Needed, Database and Application Versions are both 208."

Step 2 On the test EMS Server, double-click on the *EMS Server* icon to start the EMS Server application. Allow time for the EMS Server startup procedure to execute. Look for "*EMS Server: UP*" to scroll by in the EMS Server window to confirm that the Server is up and running. If the EMS Server does not start, call Cisco TAC (1-800-553-2447).

The resulting EMS Server window must remain open to keep the EMS Server running. It can be minimized during Server operation.

Warning **Note that the EMS Server window should not be closed during Server operations, but it can be minimized. If the EMS Server ever needs to be stopped, do not click on the "X" in the top right-hand corner of the window. Instead, open a command prompt window, enter the "*stopemsserver*" command followed by the administrator user id, *Enter* and then enter the password and *Enter*, as shown in Figure 7-4.**

Figure 7-4 Stopping the EMS Server



7.1.3.3 Configure the BWX EMS Server

Note The minimum configuration that you will enter into the EMS server will be through the Configuration & Alarm Manager (CAM) application, which is a graphical user interface (GUI). If you are not already familiar with the CAM, please review the *BWX Mobile WiMAX Configuration Guide*.

Please refer to the *BWX Mobile WiMAX Configuration Guide* for instructions on the configuration of the EMS server. The configuration of the EMS server includes the following elements:

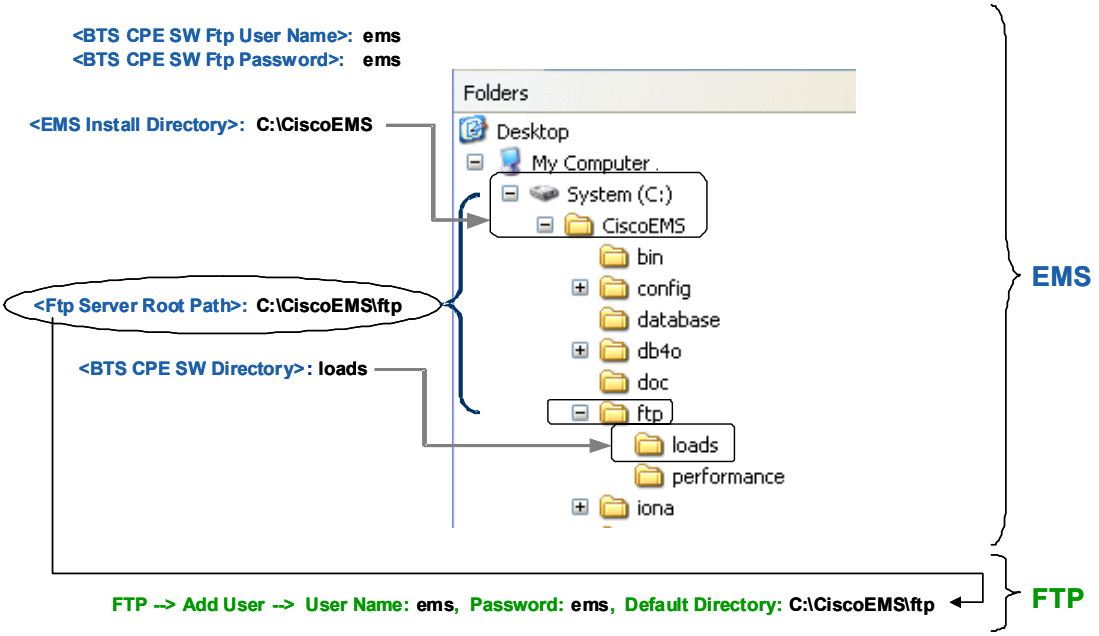
- General configuration
- Alarm Management configuration
- Performance Management configuration

7.1.3.3.1 General Configuration

General configuration of the EMS server includes changing the *EMS ID & Network ID* fields, entering the *FTP user name*, *password & FTP server root path*, and entering the *BTS/CPE SW Directory.*

Note The software upgrade files for BSs and Subscriber Stations (SSs) must be stored on the same PC where the EMS Server was installed. An FTP server must also be installed on that same PC. Under the FTP server you must add a user, give this user a password, and assign this user a root default directory. Under the EMS tab, this user, password, and root directory must be specified during configuration. To do an upgrade, the file(s) are placed on that directory, and the process is initiated on the EMS, which communicates with the FTP server (which is the one that does the actual transfer). Refer to Figure 7-5.

Figure 7-5 FTP Server Windows Example



Note If upgrading the EMS software from release 6.2.*X* to release 7.0 or higher, it will be necessary to manually change the *Ftp Server Root Path* field in the *Config EMS* screen to "*C:\CiscoEMS\ftp*".

7.1.3.3.2 Alarm Management Configuration

Alarm Management configuration of the EMS server includes setting the Alarm Auto Acknowledgement (*Alarm AutoAck*) parameter, setting the Maximum Acknowledgements per hour (*Max Ack Per Hour*) parameter, and setting up the Alarm Notification by Email parameters (Mail server IP, Email addresses, & specifying which alarms will be mailed to which addresses).

7.1.3.3.3 Performance Management Configuration

Performance Management configuration of the EMS server includes setting the Enable Performance Analyzer (*Enable PerfAnalyzer*) parameter, setting up the Alarm Notification by Email parameters (Mail server IP, & Email addresses) and setting up the SS Auto Logging parameters.

7.2 Install Access Services Network Gateway (ASN-GW) Hardware and Broadband Wireless Gateway (BWG) Software

The BWX 8415 Basestation interfaces a 7600 Series Access Services Network Gateway (ASN-GW) router (refer to Figure 7-6). The router must be installed, and then loaded with the WiMAX software application called Broadband Wireless Gateway (BWG). It is beyond the scope of this document to provide router installation procedures. For information on installing the Cisco BWG, refer to the ASN-GW documentation at the following links:

www.cisco.com > *Documentation* > *Routers* > *Cisco 7300 Series Routers* or *Cisco 7600 Series Routers*

or

http://www.cisco.com/en/US/products/hw/routers/ps352/tsd_products_support_series_home.html

or

http://www.cisco.com/en/US/products/hw/routers/ps368/tsd_products_support_series_home.html

or BWG Data Sheet:
http://wwwin.cisco.com/sptg/mscbu/mwg/prods/cmx/pg/bwg/files/BWG-R11-DS.pdf

In section 7.3 are the configuration settings to make the BS and BWG communicate.

Figure 7-6 7600 ASN-GW Routers

7.3 Add and Configure the BWG to the EMS Server

Reference:

- *BWX Mobile WiMAX Configuration Guide P/N: OL-16313-02*

Please refer to the *BWX Mobile WiMAX Configuration Guide* for instructions on the configuration of the BWG. The configuration of the BWG includes the following elements:

The EMS configures in the BWG all information relative to service level agreements (service flows, packet classifiers, quality of service, user groups, VRFs, etc.) and the definition of AAA services. EMS initiated BWG configuration is only written into memory. To make configurations non-volatile, they must be saved with the BWG Action command "*Commit to BWG*".

The EMS does not configure Layer 3 information, such as physical and logical interfaces, and routing. These must be configured manually in the BWG.

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7.4 Authentication, Authorization, and Accounting (AAA) Server Installation

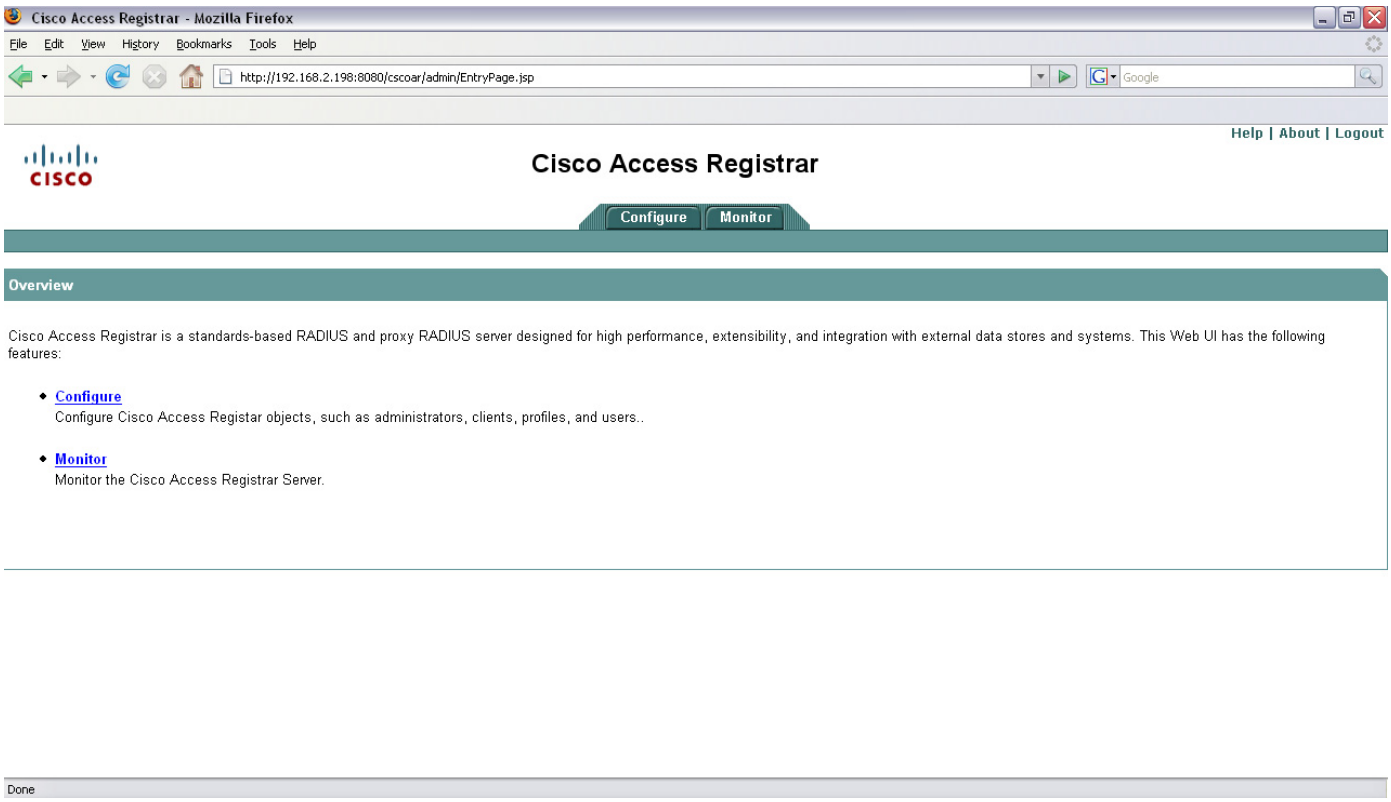
As part of the WiMAX Profile C architecture, the AAA server is a key element providing subscriber and device authentication as well as configuration. The BWG communicates using RADIUS with the AAA server for subscriber/device authentication and configuration. The configuration information is then relayed by the BWG to the BS using the R6 interface.

Cisco's BWG open architecture design makes it compatible with any AAA server that also uses open architecture protocols. **In Release 10.0, all subscriber configuration information is captured in an AAA database.**

As a subscriber attempts to access the network, the SS communicates with the BS. The BS contacts the BWG which in turn interfaces with the AAA database to check authentication and authorization and to acquire the subscriber's profile. Assuming the subscriber's data exists and the subscriber is approved for network access, the BWG sends the information to the BS to provide service to the subscriber.

Cisco offers its own AAA application called the Cisco Access Registrar, or CAR, as part of the WiMAX end-to-end solution (Figure 7-7).

Figure 7-7 Cisco Access Registrar



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For information on installing the CAR, refer to the following links:

www.cisco.com > Documentation > Network Management > Security and Identity Management > Cisco Access Registrar

or

http://www.cisco.com/en/US/products/sw/netmgtsw/ps411/tsd_products_support_series_home.html

Note These sites provide documentation such as Release Notes, Installation and Configuration Guides, and User Guides.

Note Please note that each vendor's AAA has its own interface for configuring the subscriber information. When troubleshooting WiMAX subscriber issues, the service provider will need to investigate both the EMS and AAA data.

7.5 Add and Configure a BWX 8415 Basestation

7.5.1 Minimum System Configuration Requirements

During deployment of a system, only the minimum EMS, BS, SS, BWG, and global parameters must be entered to get the system up and running for testing before turning the site over to the service provider. The service provider may ask you to do more, but in this section we go over the EMS fields that must be configured in order to complete the commissioning of the system.

At this stage, you should have already installed the EMS Server and Client applications, rebooted the Server computer (which executed the "configserver" batch file), and added the BWG. The following list is typical information you will need to know to enter the minimum configuration data.

- **Network ID** – This is a unique identifier for a given service provider's network. No other service provider will have the same Network ID (NID). The NID is provided by Cisco.
- **BTS ID** – Each BS must have a unique number identifier. The ID must be numeric characters and be in the following range: 0 - 1048575.
- **BTS Name** – Each BS must have a unique name identifier. The name can be a mix of alpha and numeric characters. Cisco recommends entering BWX or another identifier so that other personnel will later be able to recognize this BS as a BWX system.
- **BTS IP Address** – When you enter the IP address for the BS, the system will automatically create a second IP address for that BWX 8415 Basestation. For example, if you enter 10.10.10.1, the EMS software generates the second IP address as 10.10.10.2. The initial IP address is usually obtained from the service provider's network administrator.
- **EMS Server IP Address** – Obtained from the service provider's network administrator (for testing purposes, use the IP address of the PC where the Test EMS resides)
- **BTS Subnet Mask** – Obtained from the service provider's network administrator
- **BTS Gateway IP Address** – Obtained from the service provider's network administrator
- **BTS Center Frequency** – Obtained from the RF Plan
- **Basestation Antenna Power, RX Sensitivity** – determined by Specifications.

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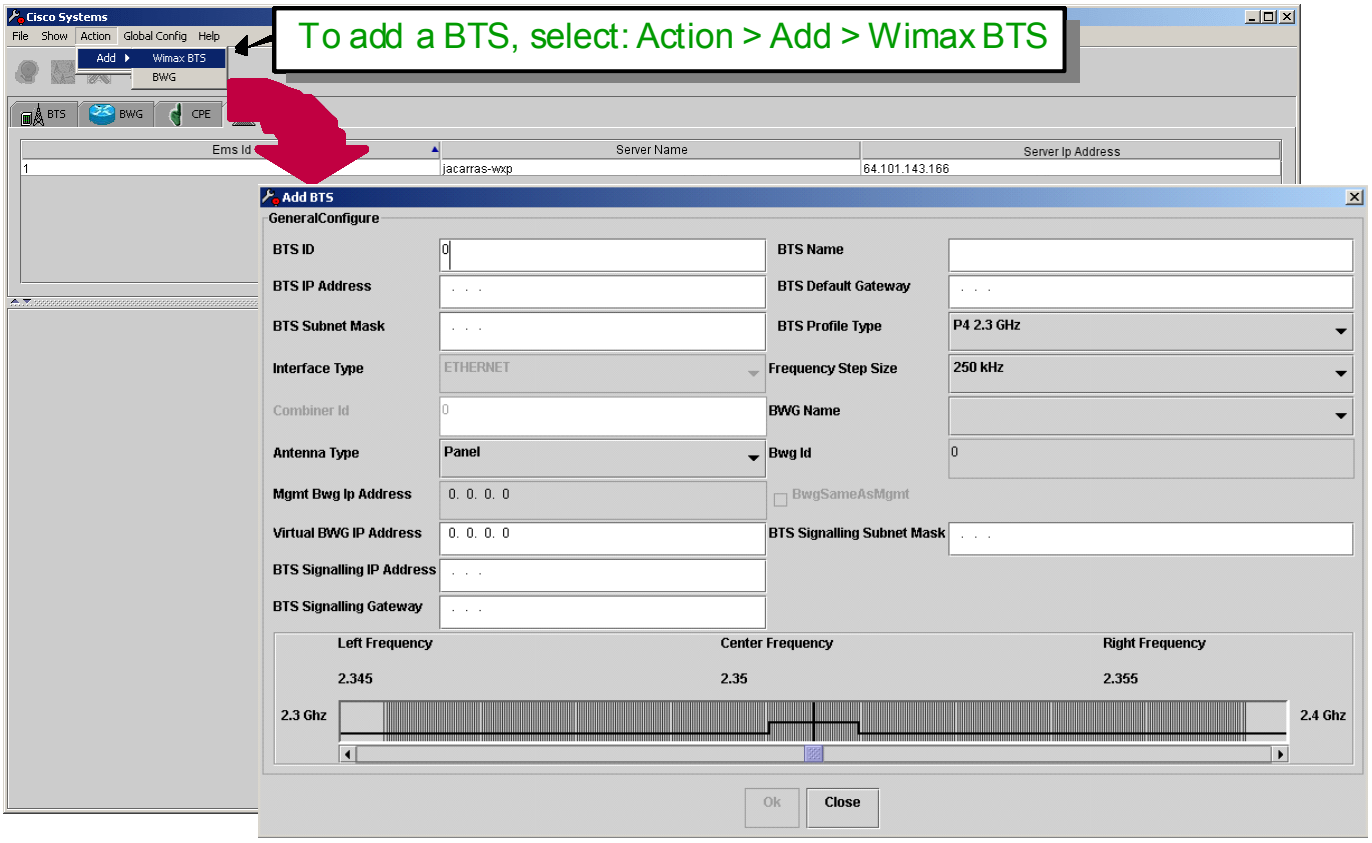
- **Active or Passive** – Antenna identified
- **Antenna Weight** (W0) Values – Obtained from the flash drive in the BS
- Whenever you define a new element (BS or SS) in the EMS database, you first add the element, then configure it by completing various fields through the EMS CAM application. Please refer to the *Cisco OS Release Notes* and the *BWX Mobile WiMAX Configuration Guide* for more datafill information.

7.5.2 Add a BWX 8415 Basestation

The steps to add a BS are shown in Figure 7-8 through Figure 7-13. Please refer to these figures as you read the remainder of this section.

Step 1 To add a BS, use the pull-down menu called ***Action***, select ***Add > BTS***, and then ***WiMAX***. Enter the information in each field. All of these fields must be entered or accept the defaults.

Figure 7-8 Add Screen for BWX 8415 Basestation



Step 2 Select the frequency band for the BS.

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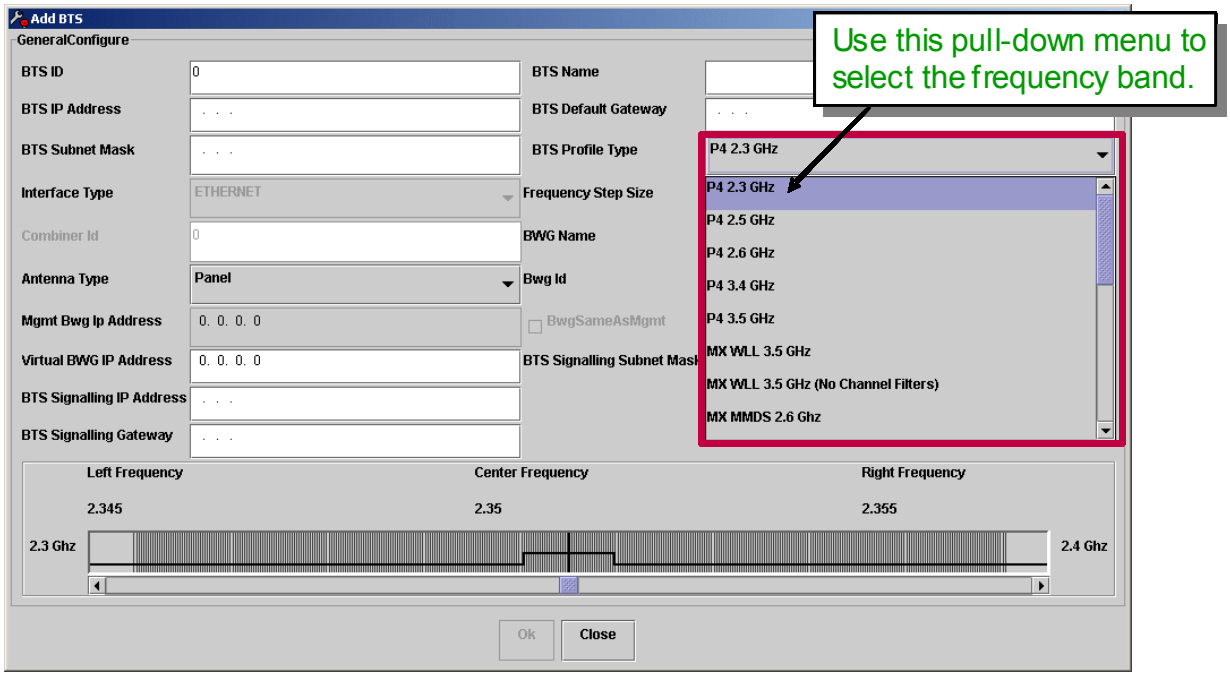
Figure 7-9 Selecting the Frequency Band



Step 3 Set the center frequency per the service provider's RF Engineering specifications. This will depend upon the particular spectrum that the service provider has permission to use, and on other radiating equipment in the geographical area. The *Center Frequency* setting is selected using the scroll bar.

Note If this BS will be operating in a licensed band, be sure to check to see whether or not it utilizes Channel Filters. If it does, the center frequency information must be entered exactly as provided on the sticker on the BS.

Caution Not entering the exact center frequency specified when using Channel Filters may result in destroying the Power Amplifiers (PA).

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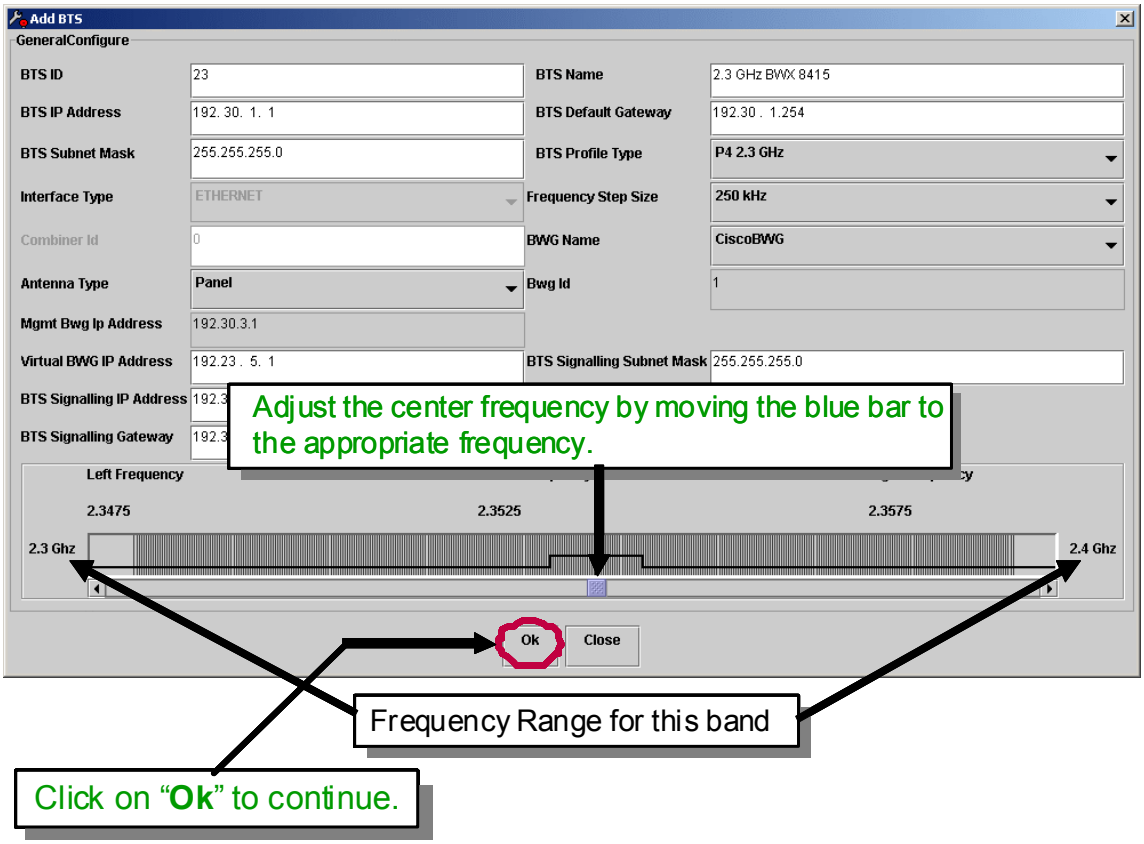
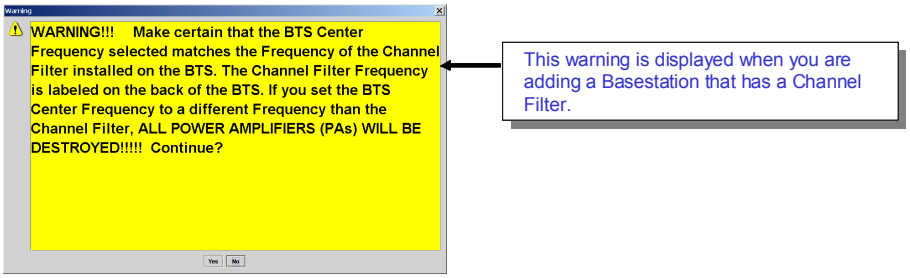
Figure 7-10 Setting the Center Frequency



Step 4 Verify that Center Frequency matches the frequency of the Channel Filter and then click ***Yes*** to continue.

Note The EMS gives this warning when you click "OK" to continue configuring the BS after setting the center frequency.

Figure 7-11 Channel Filter Warning



Step 5 Confirm that the BS was added successfully by clicking on ***Ok***.

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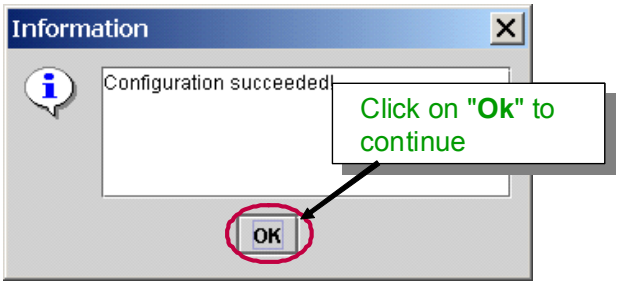
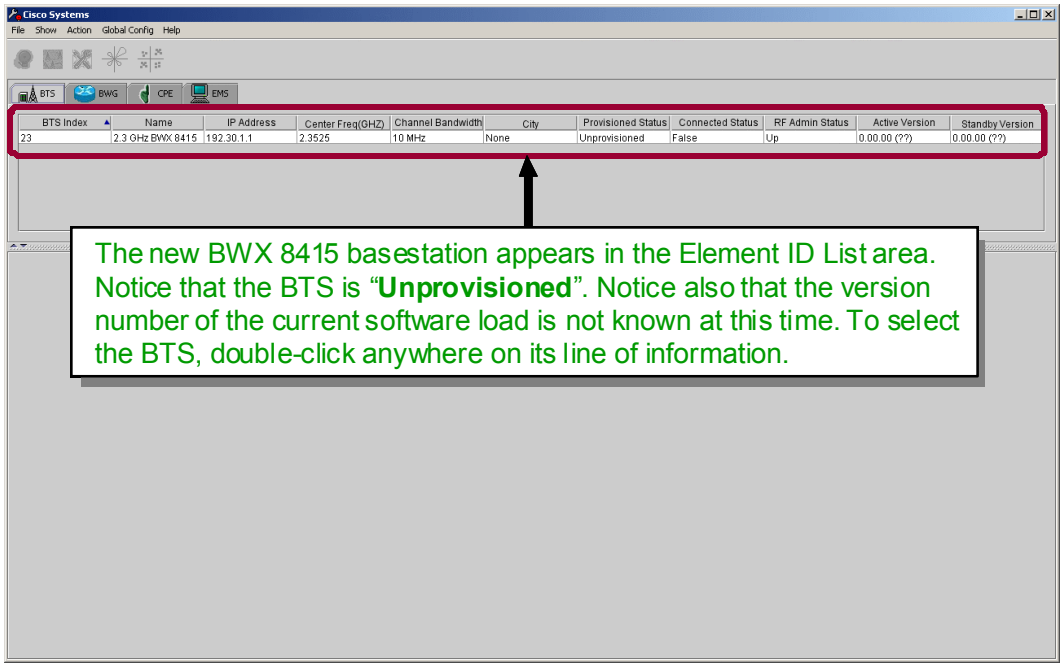
Figure 7-12 Basestation Added Successfully



Step 6 Next, you will see the new BS added to the list under the BTS tab. Double-click on the BTS entry to select the BS.

Figure 7-13 Basestation added to the BTS tab



7.5.3 Configure a BWX 8415 Basestation

Configuring the BS consists of setting the following sets of parameters: General, GPS, Layer 1, Layer 2, R6, and CAC.

7.5.3.1 Set the General Parameters

The steps to set the General parameters are shown in Figure 7-14 through Figure 7-19. Please refer to these figures as you read the remainder of this section.

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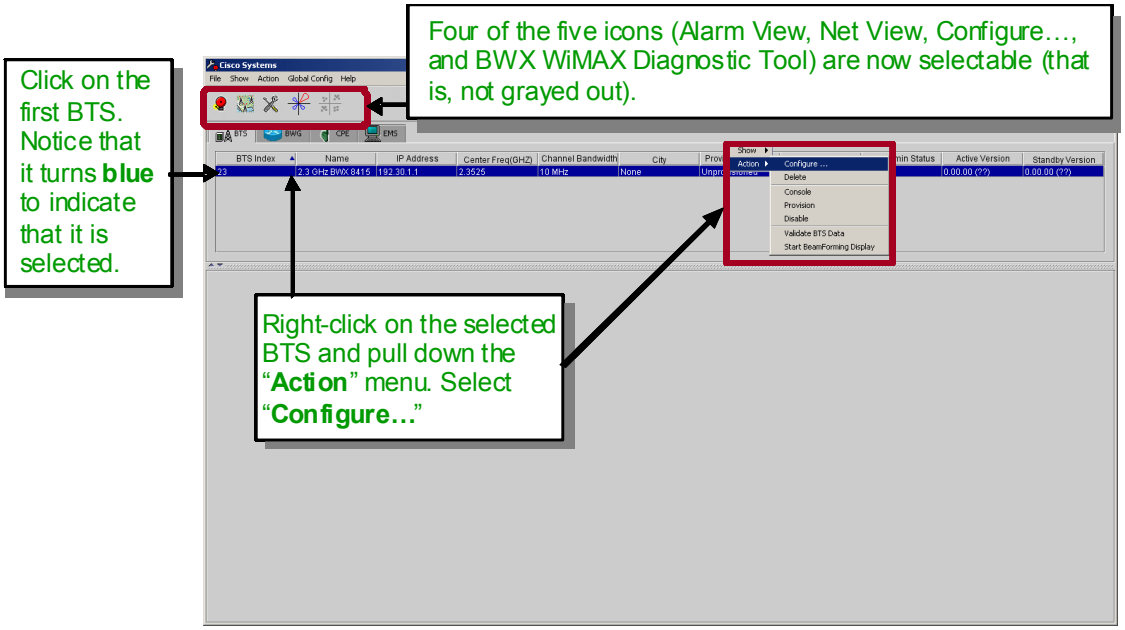
Step 1 From the BTS tab, click on the BTS which is to be configured.

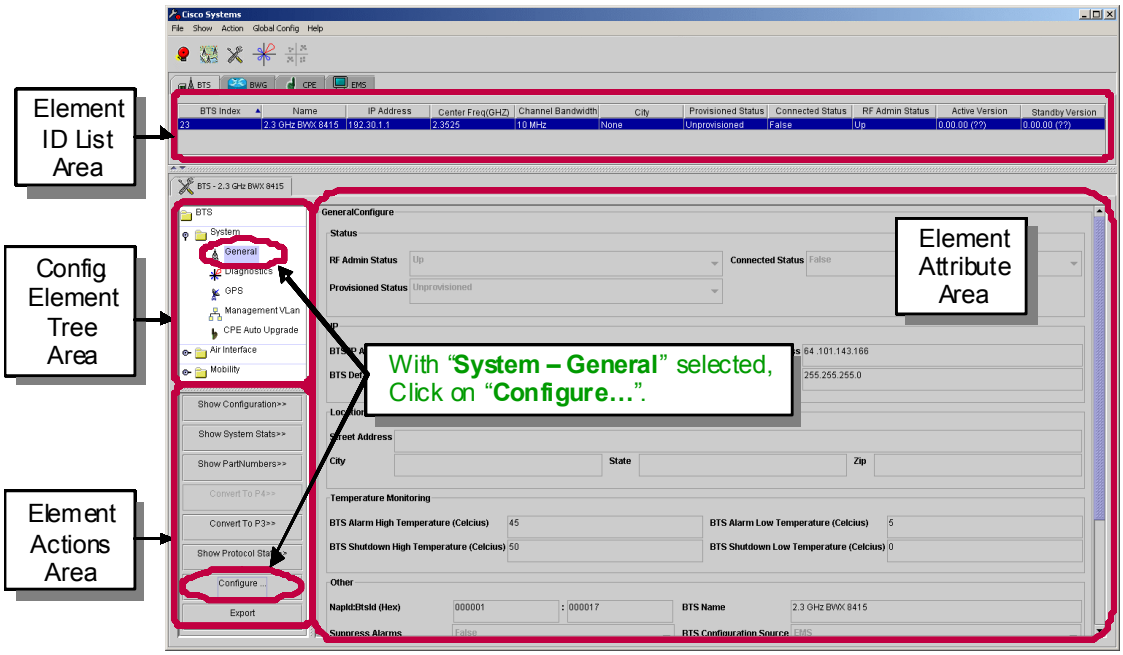
Step 2 Right-click on the selected BTS, pull down the ***Action*** menu and select ***Configure***.

Figure 7-14 Configuring the BWX Basestation



Step 3 Select ***System > General*** and then click on ***Configure***.

Figure 7-15 Selecting the General Parameters



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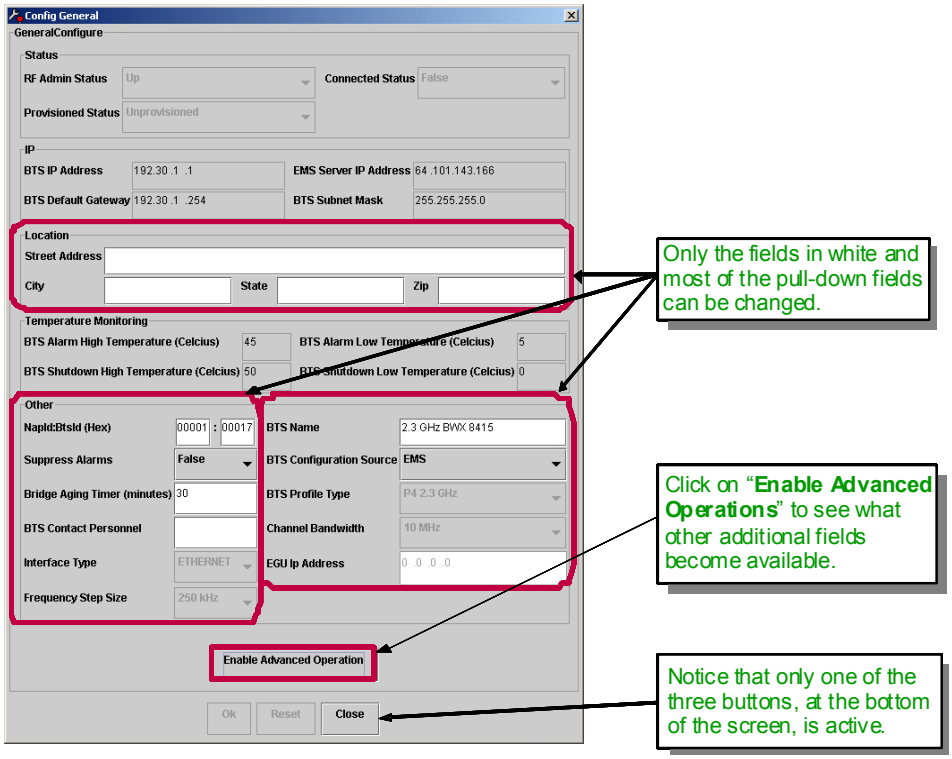
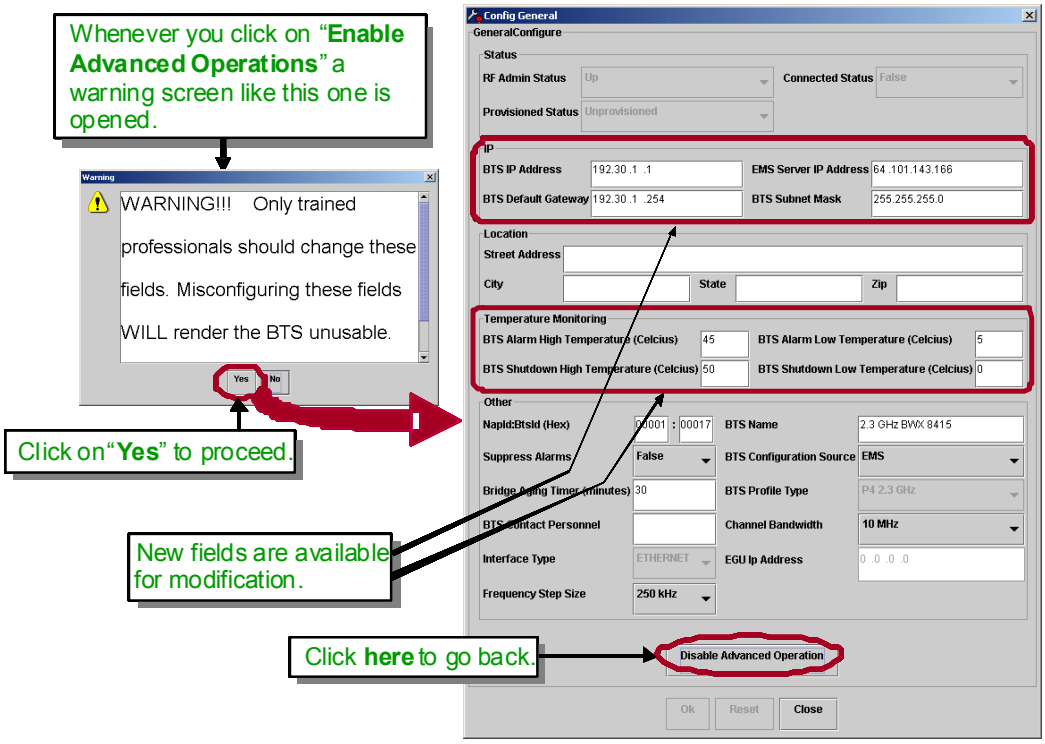
Step 4 Click on ***Enable Advance Operations*** to modify additional fields.

Figure 7-16 Enabling Advanced Operations for General Parameters



Step 5 Acknowledge the Warning by clicking on ***Yes*** and verify that additional fields are modifiable.

Figure 7-17 Enabling Advanced Operations for General Parameters (cont.)



Step 6 Update the necessary fields, to include: IP info, location, and contact personnel.

Step 7 Verify that the BTS High Temperature value is 25 (Celsius) and the BTS Shutdown High Temperature value is 30 (Celsius).

Step 8 Click on ***Ok*** to accept the changes.

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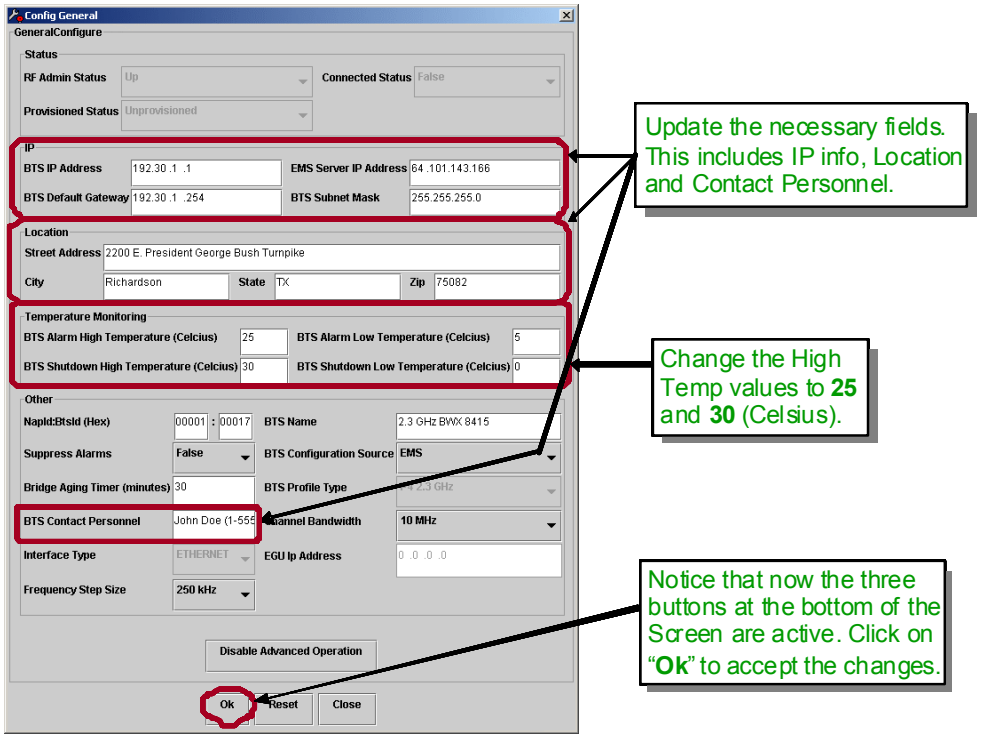
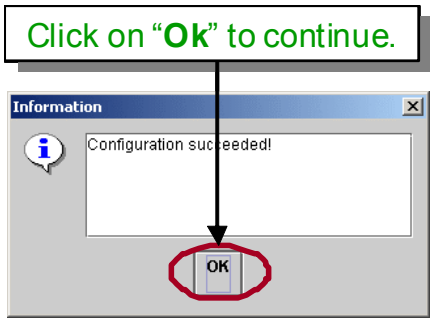
Figure 7-18 Updating Parameter Fields



Step 9 Click on ***Ok*** to continue.

Figure 7-19 Confirmation of Successful Configuration



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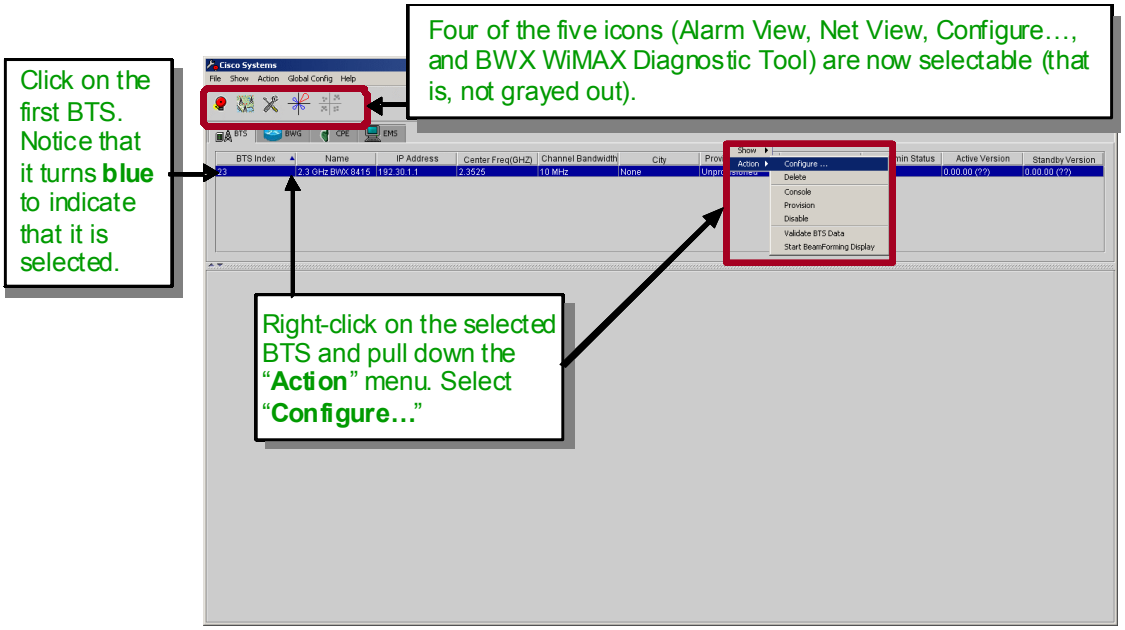
7.5.3.2 Set the GPS Parameters

Note The GPS receiver module supports WiMAX certification requirements for high-resolution timing. The GPS receiver module provides 1 pulse per second (1 PPS) and 10 MHz source.

Step 1 From the BTS tab, click on the BTS which is to be configured.

Step 2 Right-click on the selected BTS, pull down the ***Action*** menu and select ***Configure***.

Figure 7-20 Configuring the BWX Basestation



Step 3 Select ***System > GPS*** and then click on ***Configure***.

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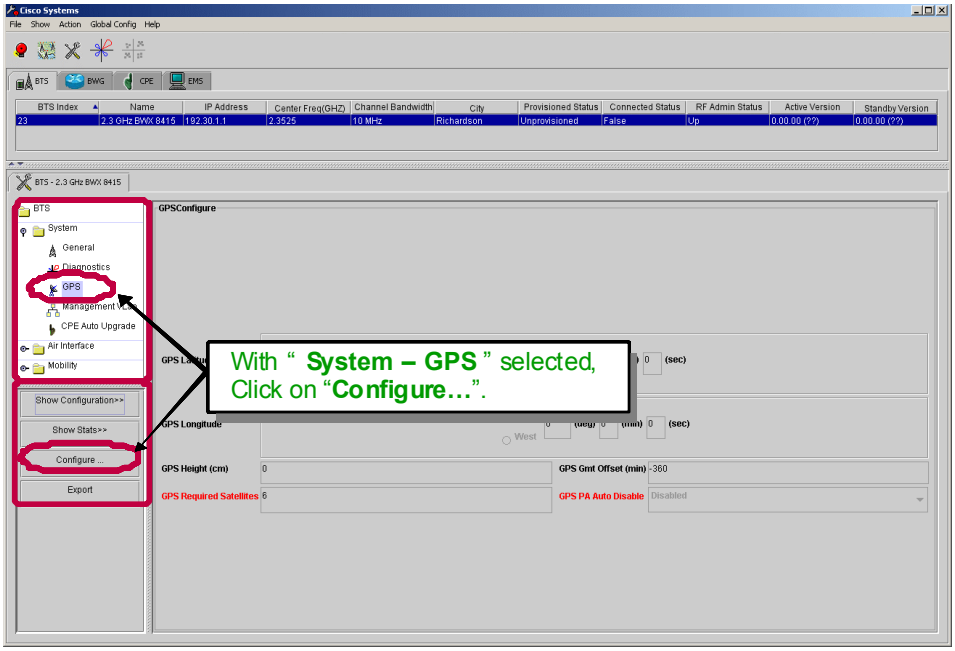
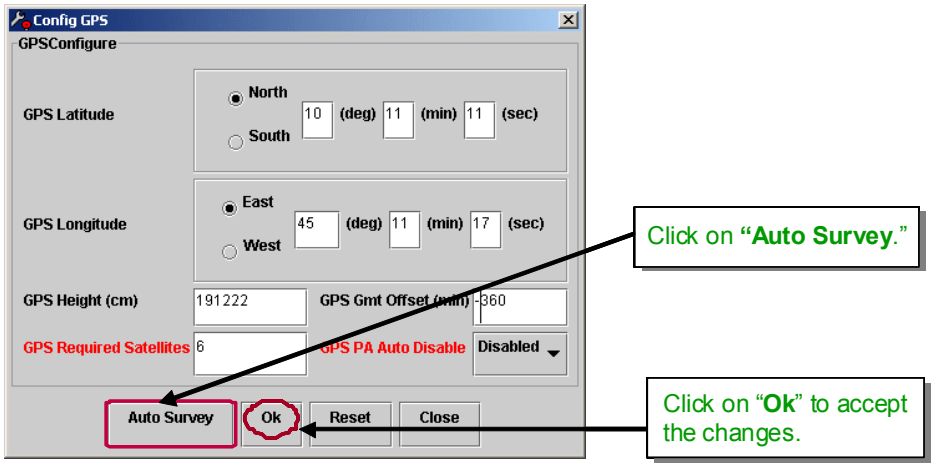
Figure 7-21 Selecting the GPS Parameters



Step 4 Click on ***Auto Survey*** to configure the GPS receiver module.

Step 5 Click on ***Ok*** to accept the changes.

Figure 7-22 Updating Parameter Fields



Step 6 Click on **Yes** in the warning box that will appear when the ***Auto Survey*** action is triggered.

Note The ***Auto Survey*** action can take up to four (4) hours to complete. An alarm (GPS Receiver Auto Survey in progress) will appear while the survey is in progress and the BS must be ***reset*** for the changes to take effect.

Step 7 Click on ***Ok*** to continue.

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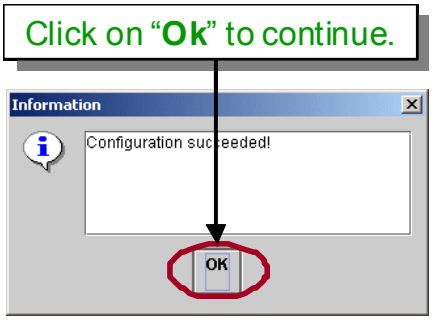
Figure 7-23 Confirmation of Successful Configuration

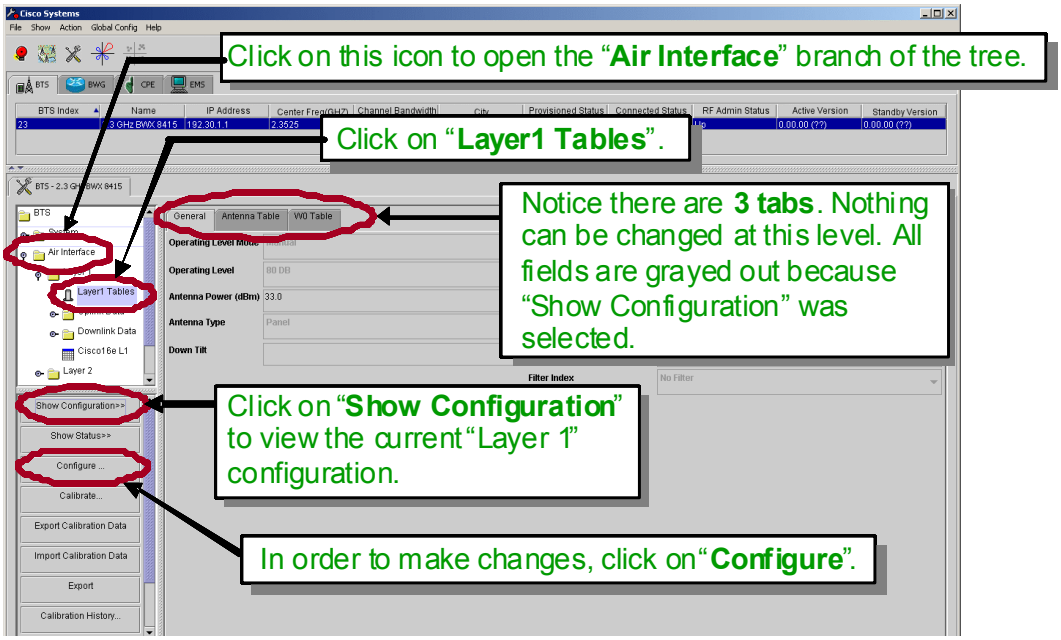


7.5.3.3 Set the Layer 1 Parameters

The steps to set the Performance parameters are shown in Figure 7-24 through Figure 7-29. Please refer to these figures as you read the remainder of this section.

Step 1 Select ***Air Interface> Layer 1> Layer 1 Tables*** and then click on ***Show Configuration*** and ***Configure***.

Figure 7-24 Selecting the Performance Parameters

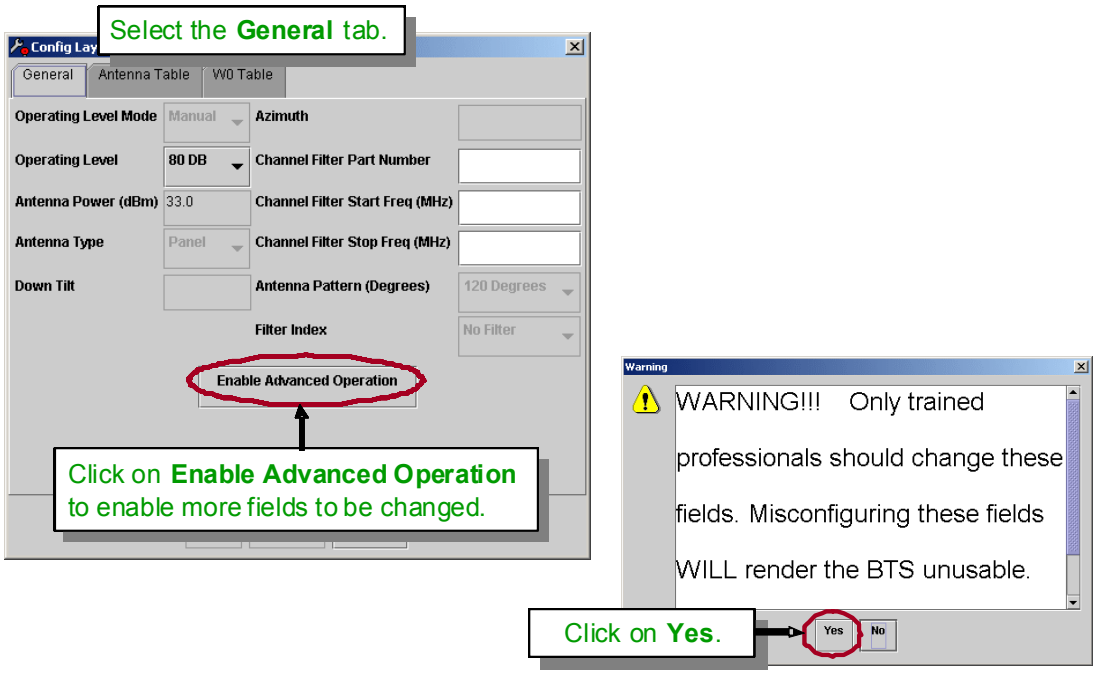


Step 2 Select the *General* tab.

Step 3 Click on ***Enable Advance Operations*** to modify additional fields.

Step 4 Click on ***Yes*** in the Warning box.

Figure 7-25 Enabling Advanced Operation for Layer 1 Parameters



Step 5 Enter the values in the following fields, as shown in Figure 7-26 below:

- Operating Level Mode = use value given by service provider (Auto/Manual)
- Operating Level = use value given by service provider (100dB/80dB/60dB)
- Antenna Power = use value given by service provider (20-35)
- Antenna Type = Panel
- Down Tilt = use value given by service provider
- Azimuth = per directions given to Installer
- Channel Filter Part Number = from sticker on channel filter
- Channel Filter Start Freq = use value given by service provider
- Channel Filter Stop Freq = use value given by service provider
- Antenna Pattern = use value given by service provider (120/90)

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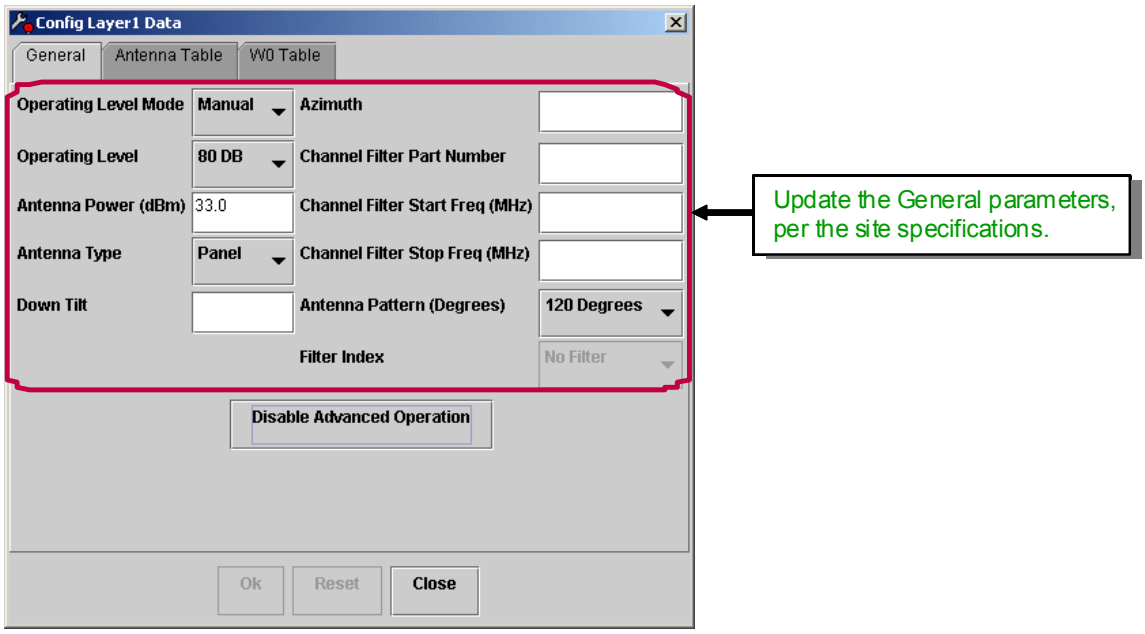
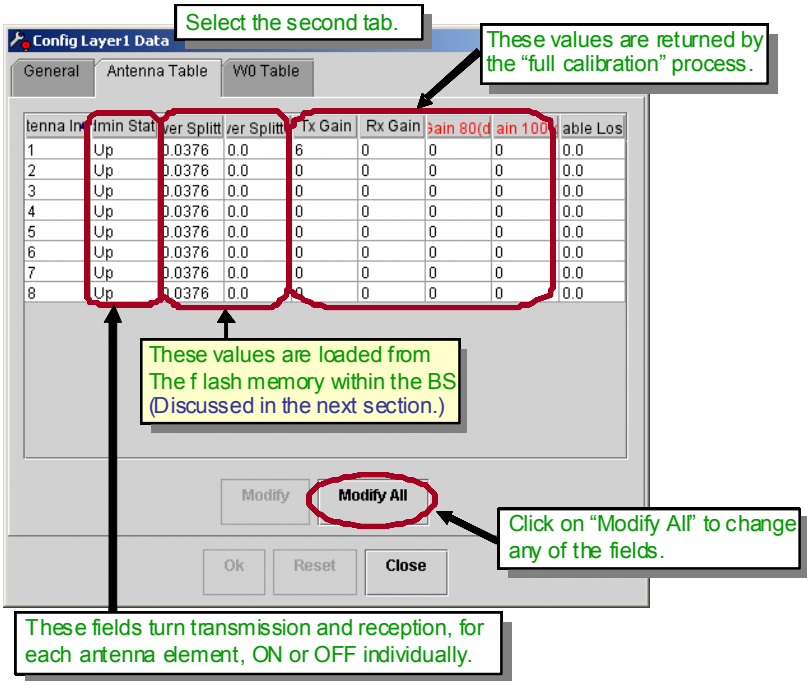
Figure 7-26 Changing the Layer 1 Parameters



Step 6 Select the second tab, *Antenna Table*.

Step 7 Select ***Modify All*** to change the values of any field.

Figure 7-27 Antenna Table Tab



Step 8 Select the third tab, *W0 Table*.

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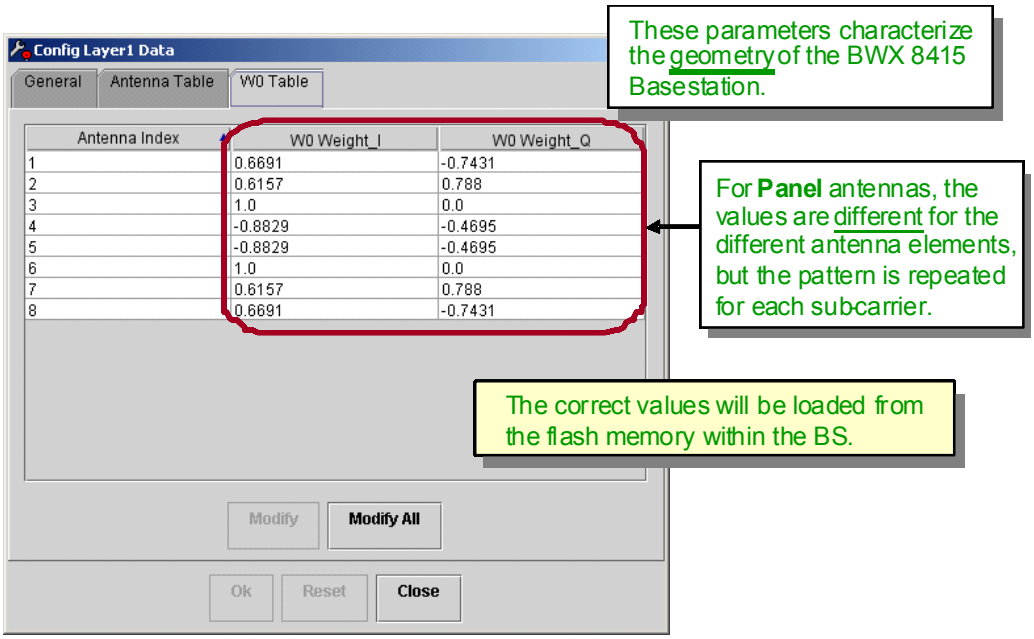
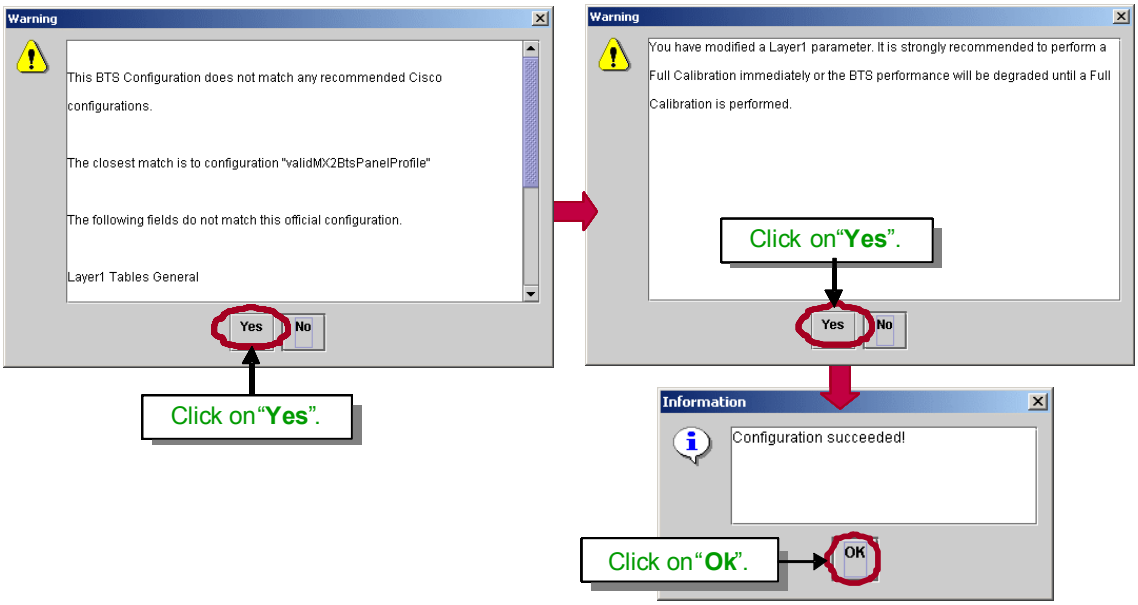
Figure 7-28 W0 Table Tab



Step 9 Click on ***Ok***, at the bottom of the screen, to continue.

Step 10 Click on ***Yes*** in the warning boxes and click ***Ok*** to continue.

Figure 7-29 Layer 1 Warning Box



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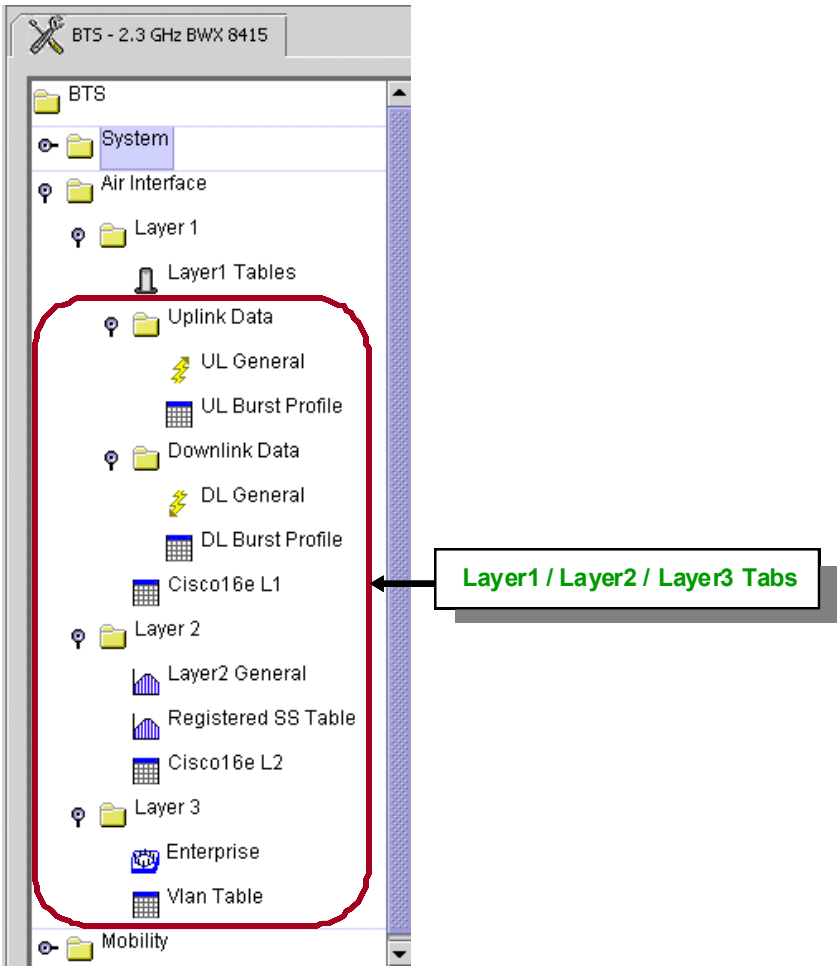
7.5.3.4 Other Parameters – Optimized Settings

The rest of the Layer1 and Layer2 values will be left at the defaults by the Installer, unless otherwise specified (see Figure 7-30).

Figure 7-30 Defaulted Layer1 / Layer2 / Layer3 Values



7.5.3.5 Set the R6 Interface Parameters

The steps to set the R6 Interface parameters are shown in Figure 7-31 through Figure 7-33. Please refer to these figures as you read the remainder of this section.

Step 1 Select ***Mobility > R6 Interface*** and then click on ***Show Configuration*** and ***Configure***.

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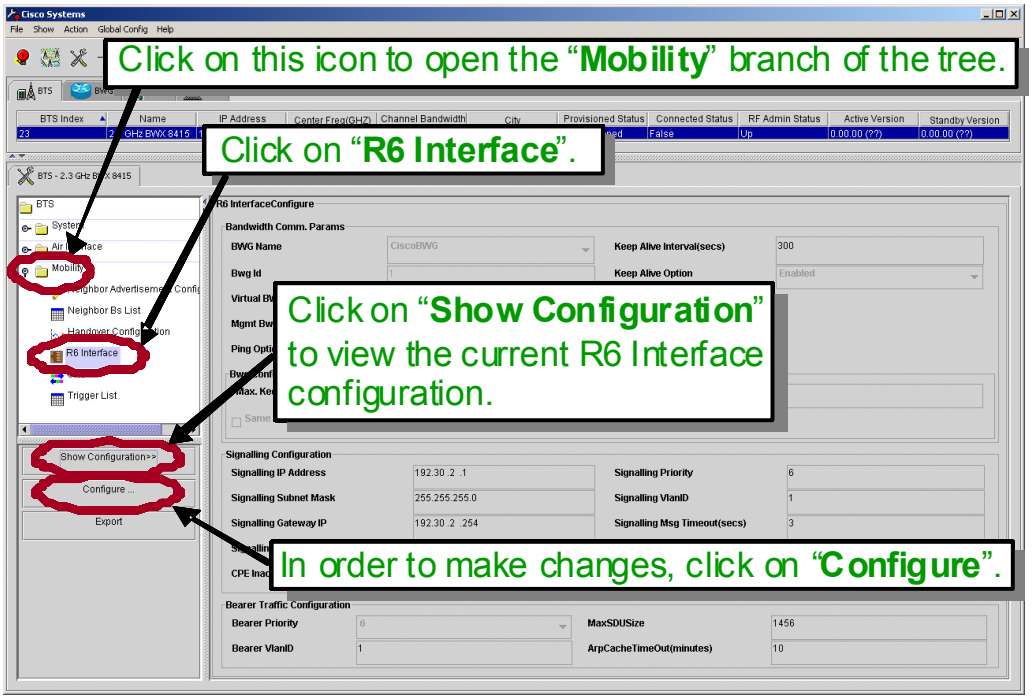
Figure 7-31 Selecting the R6 Interface Parameters



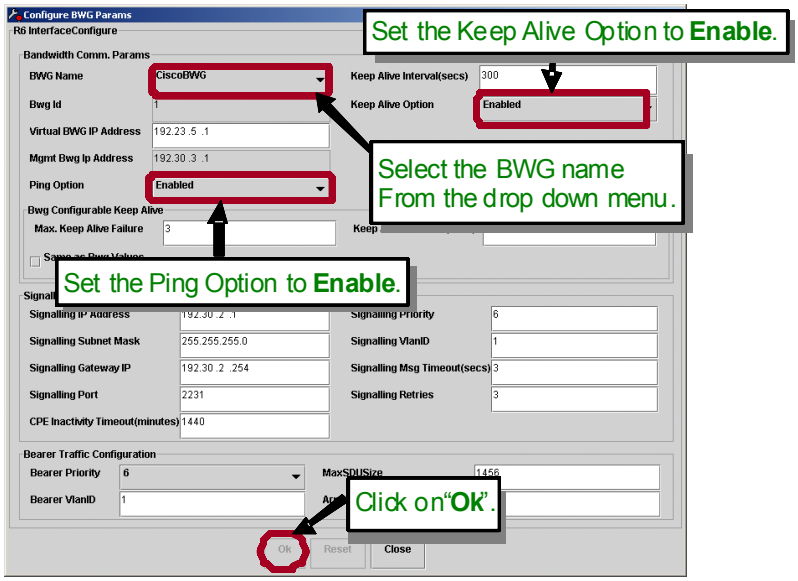
Step 2 Select the *BWG Name* from the drop down menu.

Step 3 Set the *Ping Option* to ***Enable***.

Step 4 Set the *Keep Alive Option* to ***Enable***.

Step 5 Click on ***Ok***, at the bottom of the screen, to continue.

Figure 7-32 Changing the R6 Interface Parameters



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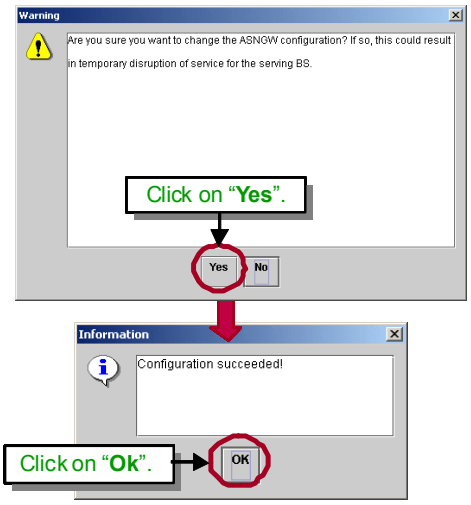
Step 6 Click on ***Yes*** in the warning box and click ***Ok*** in the Information box to continue.

Figure 7-33 R6 Interface Warning & Information Boxes

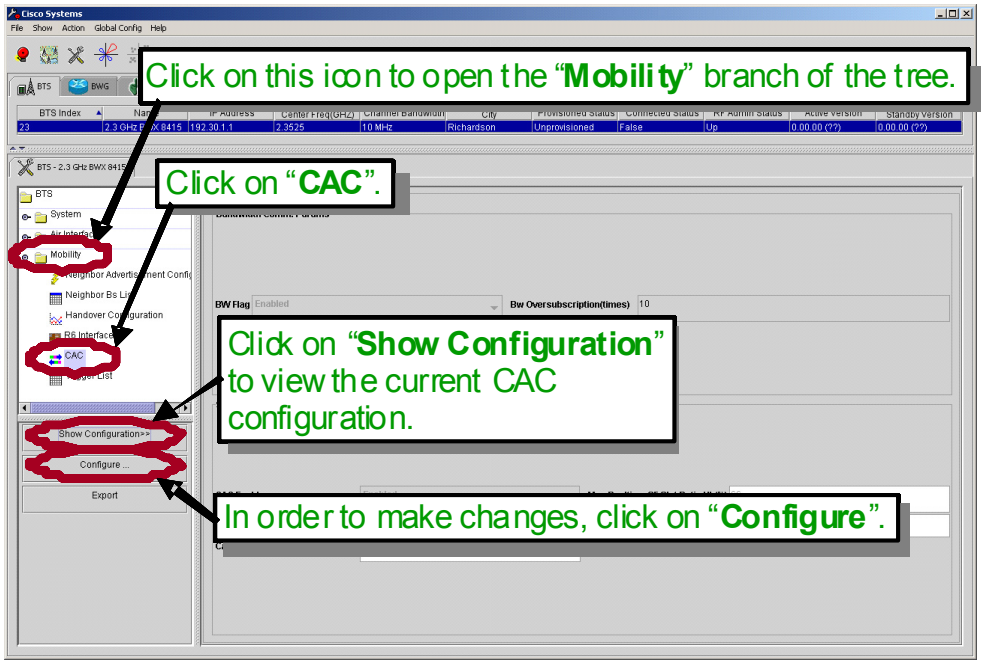


7.5.3.6 Set the Call Admission Control (CAC) Parameters

The steps to set the CAC parameters are shown in Figure 7-34 through Figure 7-36. Please refer to these figures as you read the remainder of this section.

Step 1 Select ***Mobility > CAC*** and then click on ***Show Configuration*** and ***Configure***.

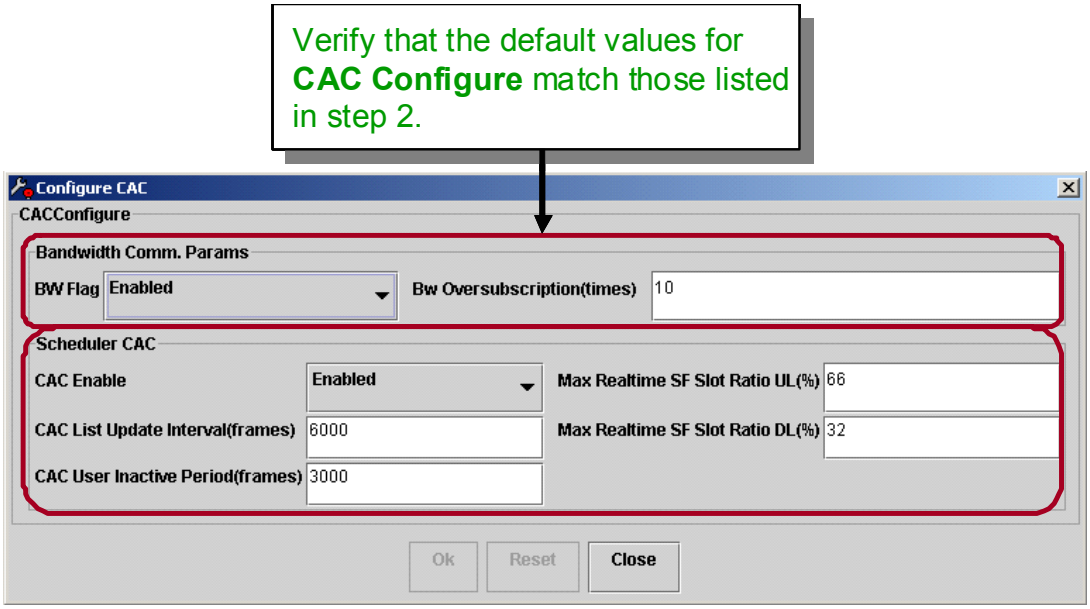
Figure 7-34 Selecting the CAC Parameters



Step 2 Verify that the following default values are set for the CAC fields *(refer to* Figure 7-35):

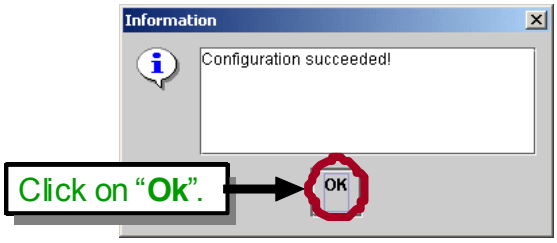
Bw flag: **Disabled**
Bw oversubscription: **10**
Cac enable : **Enabled**
List update interval: **6000**
User inactive period: **3000**
SF slot ration UL: **66**
SF slot ration DL: **32**

Figure 7-35 Verifying the Default Values for CAC Configure



Step 3 Click ***Ok*** in the Information box to continue.

Figure 7-36 CAC Information Boxes



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7.6 Power Up and Provision the BWX 8415 Basestation

Reference: BWX EMS Alarm Resolution Reference Manual

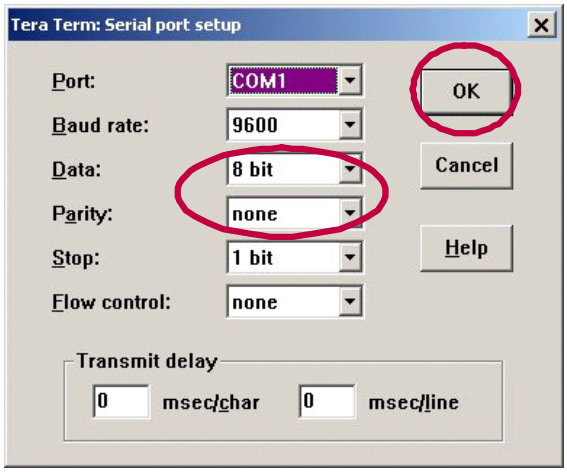
7.6.1 Prerequisites

- The EMS must be up and IP-reachable from the BS
- The BWG must be running and configured
- The BS must have been already added to and configured in the EMS
- All equipment in the system must be IP-reachable
- If a laptop with a Test EMS is being used (recommended procedure during commissioning), connect this laptop to the BS via a Telnet session

Note The Telnet session will not be established until after the BS has booted up.

- Make sure the 'Test' EMS server is running on a laptop
- Open a terminal emulation session using one of the following programs:
  - Tera Term Pro
  - HyperTerm
  - Other terminal emulation programs
- Verify the serial port settings

Figure 7-37 Serial Port Settings



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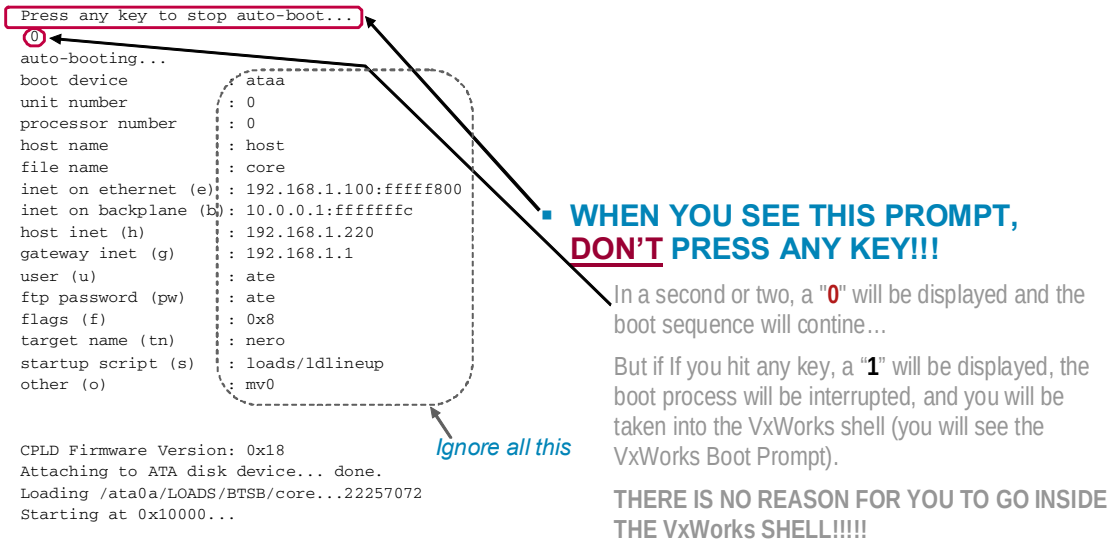
7.6.2 BWX 8415 Basestation Bootup

7.6.2.1 Power On

Step 1 With the laptop connected to the BS, through the backhaul network and TeraTerm Pro or Hyperterm running, power up the BS.

Step 2 The system boot sequence starts. When the "*Press any key to stop auto-boot...*" prompt appears, **DO NOT** press any keys. (Example 7-1).

Example 7-1 System Boot Sequence Begins (NEED NEW BOOT SEQUENCE SCREENSHOTS)



Step 3 When the "*Auto-booting (Enter "configure setup)*" prompt appears, type the word ***config*** before the countdown reaches zero (Example 7-2).

Step 4 At the boot prompt, type ***p*** and hit ***<Enter>*** to see the current value of the boot parameters (Example 7-2).

Step 5 At the boot prompt type ***c*** and hit ***<Enter>*** to configure the boot parameters, one at a time (Example 7-2).

Note Each time you hit ***<Enter>*** the next parameter and its current value are displayed and you have the opportunity to type a new value. When an incorrect parameter appears, type the correct value and hit ***<Enter>*** to continue.

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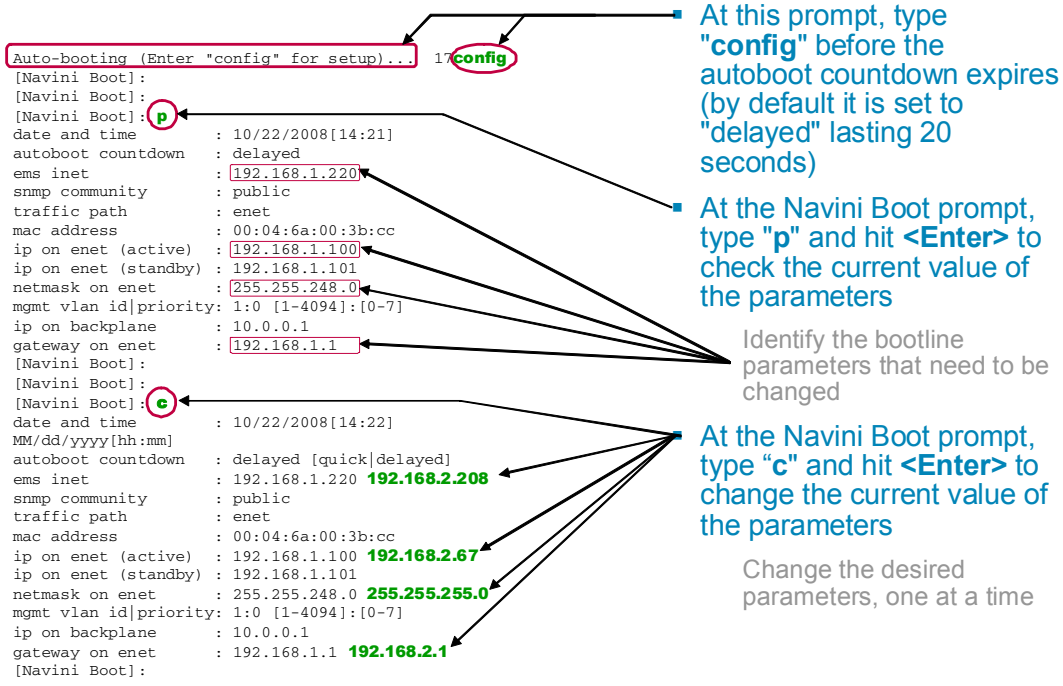
Example 7-2 System Boot Sequence (NEED NEW BOOT SEQUENCE SCREENSHOTS)



Step 6 Enter ***p*** to verify(Example 7-3).

Step 7 When all changes have been made, type @ and hit ***<Enter>*** to resume the boot process (Example 7-3).

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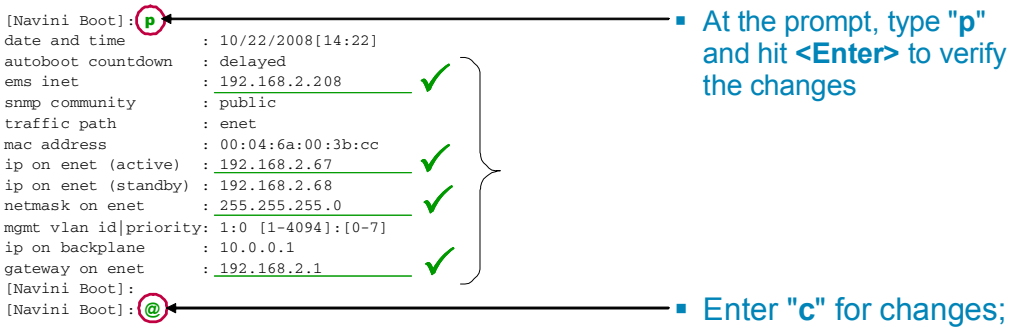
Example 7-3 Changing the Boot Parameter Values (NEED NEW BOOT SEQUENCE SCREENSHOTS)




```
CPLD Firmware Version: 0x18
Starting File System.....................Done
Mounting Drive /dev0.....................Done
Starting TCP/IP Stack....................Done
Attached TCP/IP interface to mv unit 0
Attaching interface lo0...done
Mounting Remote Filesystem..............
Default Route added,Gateway = 192.168.2.1
Host 172.31.26.201 added to host table  ..........Done
Starting Telnet Daemon...................Done
Starting Load Monitoring Tools...........Done
Loading symbol table from /cf/LOADS/BTSB/core.sym ..Done
Starting WDB Tools.......................Done
Starting Target Shell....................Done
Initializing System Logger...............Done
```

Example 7-4 Continuation of the Boot Process (NEED NEW BOOT SEQUENCE SCREENSHOTS)

```
Programming System Support Fpga ..........Done
Programming Shazam Fpga ..................Done
Programming Aphex Fpga ...................Done
Programming RF Fpga ......................Done
Starting L1 DSP Bootloader .......................
WIMAX APP
CP Image Path = /cf/LOADS/BTSB/CP01_MX_IMAGE.bin ... : File open - Success
PP01 Image Path = /cf/LOADS/BTSB/CCP01_MX_IMAGE.bin ... : File open - Success
XP Image Path = /cf/LOADS/BTSB/XP_MX_IMAGE.bin ... : File open - Success
Reset Vals = 0
------------------  DSP STATUS REGISTERS  -------------------------
-----------------------------------------------------------------------
|GDSW Ver|ResetReg|AUX|PP01|PP23|PP45|PP67|CP01|CP23|CP45|CP67|CP89|
-----------------------------------------------------------------------
|   98   |    0   |  b |  b |  0 |  0 |  0 |  b |  b |  b |  b |  0 |
-----------------------------------------------------------------------
Starting MPC184 Security Processor........Done
Enable All: XP, CCP, [4]CPs (DSP Bootline Flag: 0x5f)...BootlineMask = 5f
Calling OAM Mem Pool
##########Starting L2 Tasks############
START BtsL2L3If::BtsL2L3If
OAM Mem Pool... Done
Initializing GDSW Parameters..............Done
Starting MCE..............................Done
Starting AsnCom...........................Done
Starting AsnComRx.........................Done
Starting MME..............................Done
Initializing OAM MemPools .............Done
Initializing L2 Applications.....................Done
Initializing Doubly List..................Done
Starting BTS L2 L1If .....................Done
```

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Example 7-5 Continuation of the Boot Process (NEED NEW BOOT SEQUENCE SCREENSHOTS)

```
Starting BTS L3IfAgent...................Done
Initializing BTS L2 MemPools ............Done
Initializing BTS MacSys..................Done
Initializing RM Helper...................Done
Initializing Mac Resource................Done
Initializing BTS UCD/DCD Manager.........Done
Initializing BTS Ranging Manager.........Done
Initializing UL MgmtMsg Processor........Done
Initializing BTS DSx Msg Manager.........Done
Initializing BTS CS Processor............Done
Initializing BTS MSS Manager.............Done
Initializing BTS CID Manager.............Done
Initializing BTS PDU Processor...........Done
Initializing BTS PHY Processor...........Done
Initializing BTS SF Manager..............Done
Starting BTS L2AUTHENTICATOR TASK.....................Done
Starting BTS L2 OAM......................Done
Initializing BTS NBR_ADV Manager.........Done
 Starting MakeInstance
 Done
Starting BtsL2L3If.................Done
Starting BTS L2MAC Rx....................Done
Starting CDI Nero........................Done
Starting EtherBridge.....................Done
Starting ARP FSM.........................Done
Starting ARP.............................Done
Starting Dpf.............................Done
Starting RME.............................Done
BootlineMask = 5f
EnableFlag = ffc003
Starting PHY Processing..................Done
```

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Example 7-6 Continuation of the Boot Process (NEED NEW BOOT SEQUENCE SCREENSHOTS)

When booting from the EMS you get this:

```
Selecting Config Data Source as EMS.....Done
Initializing NvRam Mib.....Done
Initializing SNMP Agent.....Done
EMS (192.168.2.208) Ping Attempt.....Done
Selecting Config Data Source as EMS.....Done
Initializing NvRam Mib.....Done
Initializing SNMP Agent.....Done
EMS (192.168.2.208) Ping Attempt.....Done
Requesting EMS for Configuration Data.....Done
Configuring BTS from EMS.....Done
Starting MMM.....Done
Starting Sfm.....Done
!!!!!!!! BTS Initialization Complete !!!!!!!!!
```

This step may take a few moments. If the BTS fails to receive the configuration data from the EMS (the line will say "Pending" instead of "Done"), this step will timeout and the BTS will request the configuration data data again. If the BTS keeps trying and trying and still does not get the data from the EMS (each iteration may take 3 or 4 minutes), there is a communication problem between the BTS and the EMS. Check the Ethernet connections and/or the EMS IP address under System→ General in the BTS Configuration record.

Example 7-7 Completion of the Boot Process (NEED NEW BOOT SEQUENCE SCREENSHOTS)

```
         CCC             CCC (TM)
         CCC             CCC
         CCC             CCC
     CCC CCC CCC     CCC CCC CCC
     CCC CCC CCC     CCC CCC CCC
     CCC CCC CCC     CCC CCC CCC
 CCC CCC CCC CCC CCC CCC CCC CCC CCC
 CCC CCC CCC CCC CCC CCC CCC CCC CCC
 CCC CCC CCC CCC CCC CCC CCC CCC CCC
 CCC CCC CCC CCC CCC CCC CCC CCC CCC   P R O F I L E C
 CCC CCC CCC CCC CCC CCC CCC CCC CCC
 CCC CCC CCC CCC CCC CCC CCC CCC CCC
 CCC CCC CCC CCC CCC CCC CCC CCC CCC
         CCC             CCC           Copyright (c) Cisco Systems, Inc.    2008
         CCC             CCC           Copyright (c) Texas Instruments, Inc.  2000-2001
         CCC             CCC           Copyright (c) Wind River Systems, Inc. 1984-2002

    ###     #####    ####      ###      ###
  ##  ##     ##     ##  ##   ##  ##   ##  ##
 ##          ##     ##      ##       ##   ##
##           ##       ##    ##       ##    ##
##           ##        ##   ##       ##   ##
##  ##      ##     ##  ##   ##  ##   ##  ##
 ###     #####     ####     ###      ###

 S Y S T E M S
                                KERNEL : VxWorks5.5.1(WIND version 2.6)
                                BSP    : 1.5RW7.0.2.9
                               CPU: Cisco Nero 7447A Power PC.  Processor #0.
                              Memory Size: 0xfe00000.
                              WDB: Ready.
                Reset Reason: S_RESET
Current time is WED OCT 22 14:27:22 2008
```

S_RESET means reboot from the console. Also possible are **UNKNOWN** ("hard reset"), **EMS_RESET** (Reset BTS from the EMS) and **WATCHDOG** (BTS rebooted by itself)

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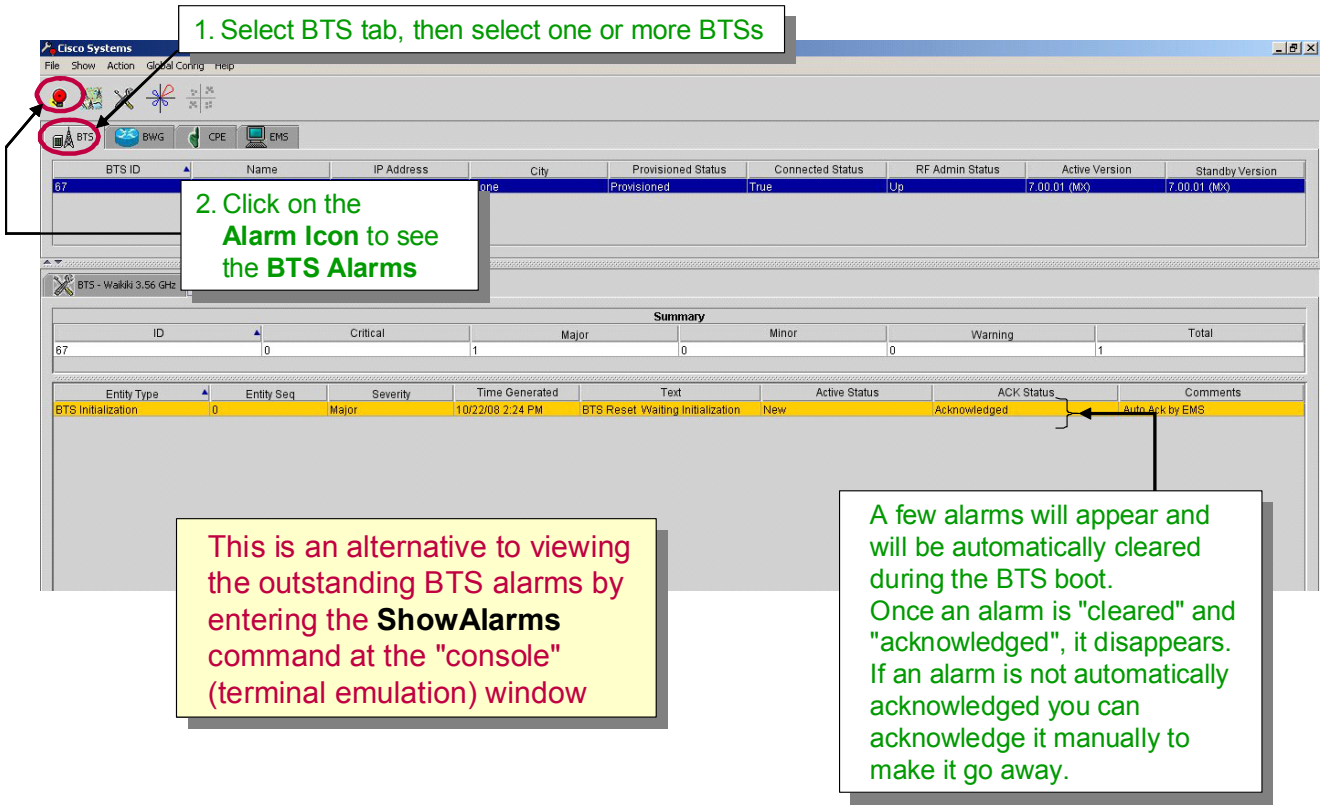
7.6.2.2 Check for Alarms

To check the EMS CAM for alarms, follow the instructions in Figure 7-38. All alarms must first be acknowledged, then cleared. Refer to the *BWX EMS Alarm Resolution Reference Manual* for look-up descriptions and resolutions for each alarm.

Figure 7-38 Check Alarms



Refer to Figure 7-39 for the Alarm Severity indicators.

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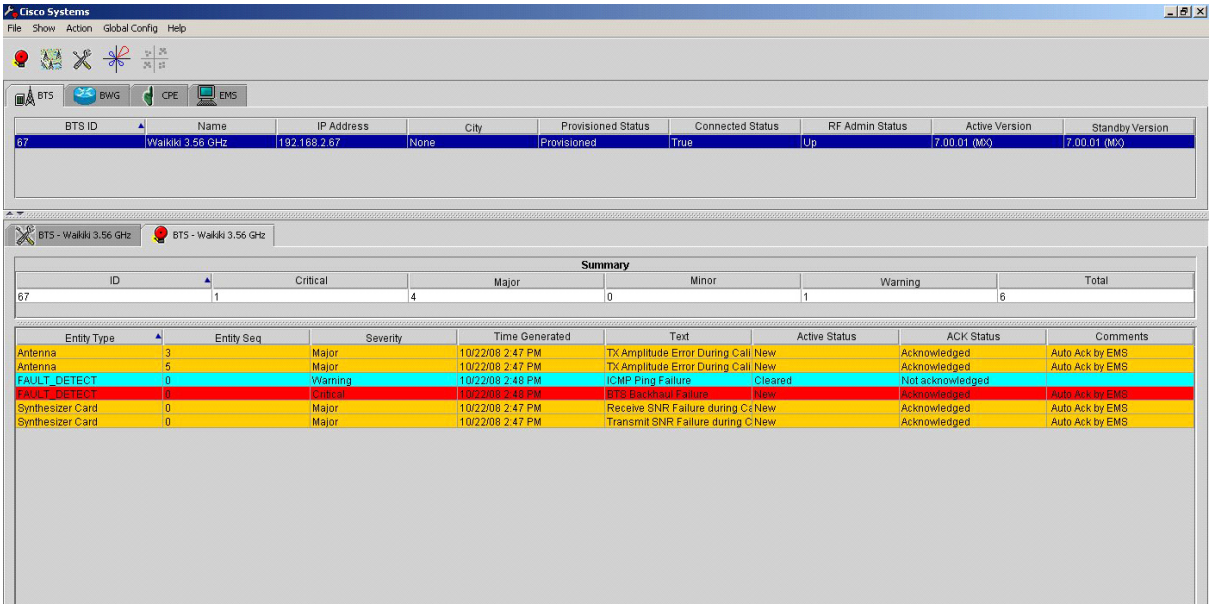
Figure 7-39 Alarm Severity Indicators

- Severity indicators

1 – Warning 2 – Minor 3 – Major 4 - Critical



7.6.3 Provision the BWX 8415 Basestation

When all of the basic BS configuration is completed, the BS needs to be provisioned. If the BS is “provisioned”, then any change to the record immediately affects the BS. If “unprovisioned”, you can change the record without affecting the BS. Certain actions (like “Calibrate”) require that the BS be “provisioned”.

The steps to provision the BS are shown in Figure 7-24 through Figure 7-29. Please refer to these figures as you read the remainder of this section.

Step 1 From the BTS tab, right-click on the BS which is to be provisioned.

Step 2 In the pull-down select ***Action > Provision*** to make that record active for the new BS.

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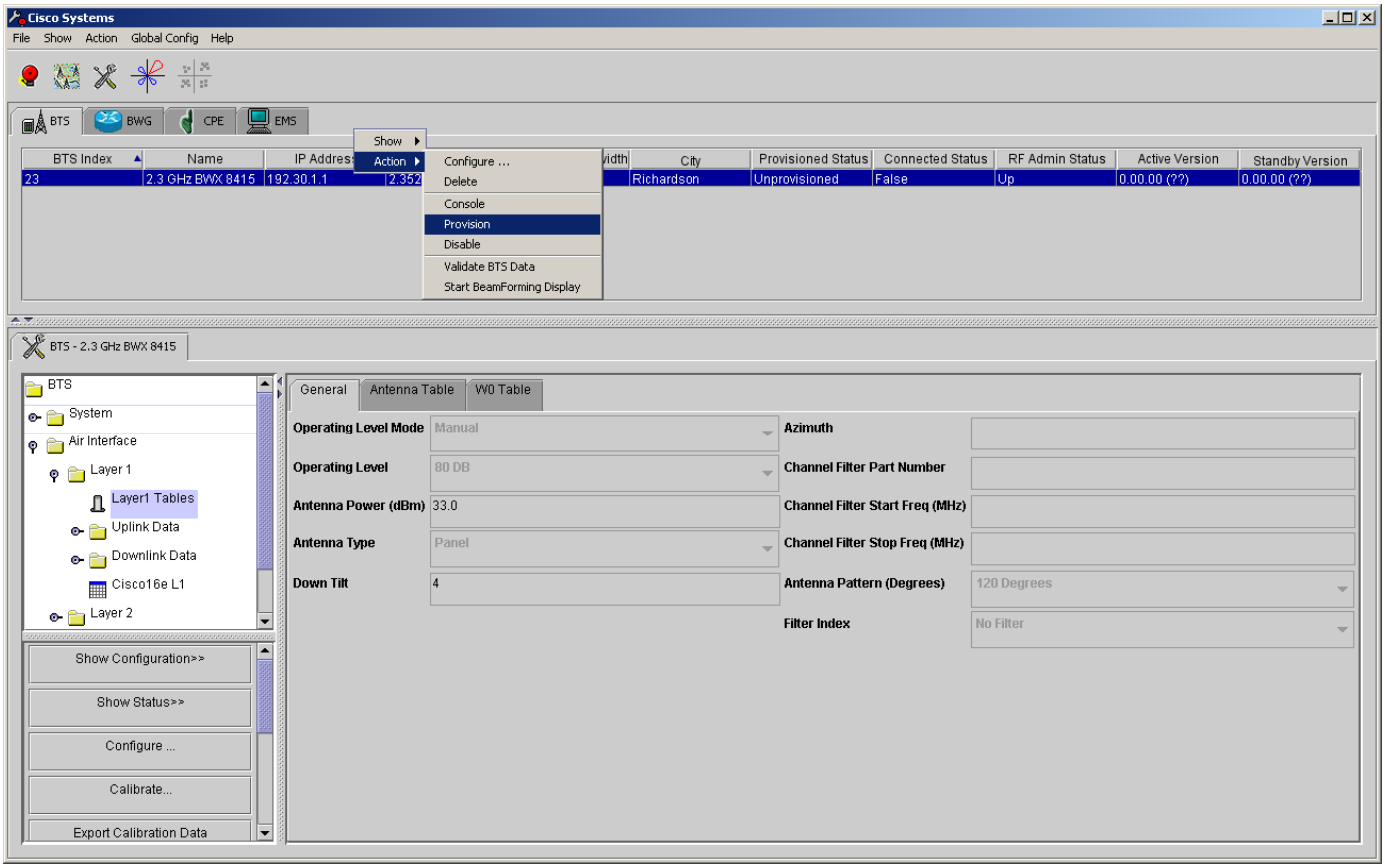
Figure 7-40 Provisioning the BWX 8415 Basestation



Step 3 Click on ***Yes*** in the warning box and click ***Ok*** to continue.

Figure 7-41 Provisioning Warning