

Cisco BWX Element Management System

Product Overview

WiMAX service providers need the ability to effectively manage all the elements in the WiMAX access service network (ASN) and dynamically measure and optimize network performance. The Cisco® BWX Element Management System (EMS) cost-effectively addresses this need by providing service management and control as well as network management for the Cisco BWX family of broadband wireless access systems.

The Cisco BWX EMS manages all elements of the WiMAX ASN down to individual Cisco BWX modems. It provides all these capabilities in combination with an industry-leading solution for optimizing the Radio Access Network (RAN) based on extensive diagnostics and performance metrics collection.

Features and Benefits

The Cisco BWX EMS offers service providers the following benefits that reduce operating expenses (OpEx):

- Industry-leading network management solution using full FCAPS functionality
- Unified interface to manage and control all elements of the WiMAX RAN: base station (BTS), subscriber station (SS), and ASN gateway (ASN-GW)
- Quality-of-service (QoS) management for multi-application use
- Extensive real-time WiMAX radio network performance monitoring of the Mobile WiMAX ASN for radio network optimization
- Configuration, alert, and alarm management
- Tremendous cost savings to the network operations center (NOC) using real time subscriber diagnostics and trouble shooting capabilities

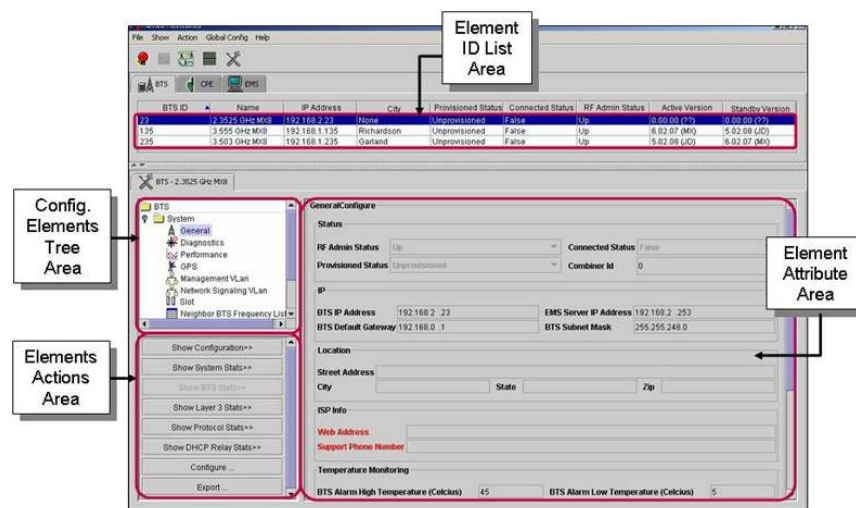
Key features of the Cisco BWX EMS include:

- State-of-the-art performance metrics and performance management functions
 - Extensive reporting of all critical RF and network parameters
 - Advanced diagnostic tools (beamforming/MIMO and constellation displays) to help operators manage and optimize network performance in real time
 - Flexibility for operators to trend WiMAX ASN metrics
 - Advanced performance dashboard to view network and RF performance in snapshot mode and trending mode
- Over-the-air diagnostics on SS devices from remote NOCs
- Over-the-air software upgrade capability to allow transparent SS upgrades without end-user involvement
- Self-provisioning capability to allow mass market retail channel sales of SS devices (captive portal)
- Simple and intuitive Java-based GUI

- Java-based server/client model to allow remote network management
- Standardized RFC-based CORBA and SNMP interfaces for OSS integration
- Multiple security levels for network management administration

Functionality

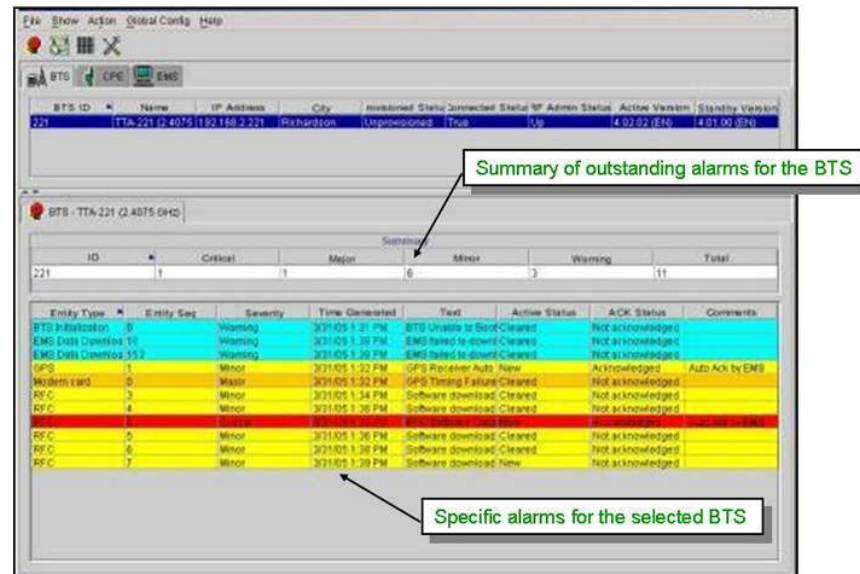
Figure 1. Cisco BWX EMS Base Station Monitoring



- Highly scalable and distributed architecture
- Local and remote real-time fault and diagnostic monitoring
- Simple and easy wizard-based installation
- Alarm and performance monitoring and reporting
- Extensive diagnostics across entire WiMAX ASN including real time subscriber diagnostics and advanced trouble shooting options
- Support for auto-provisioning of subscribers

Alarm Management

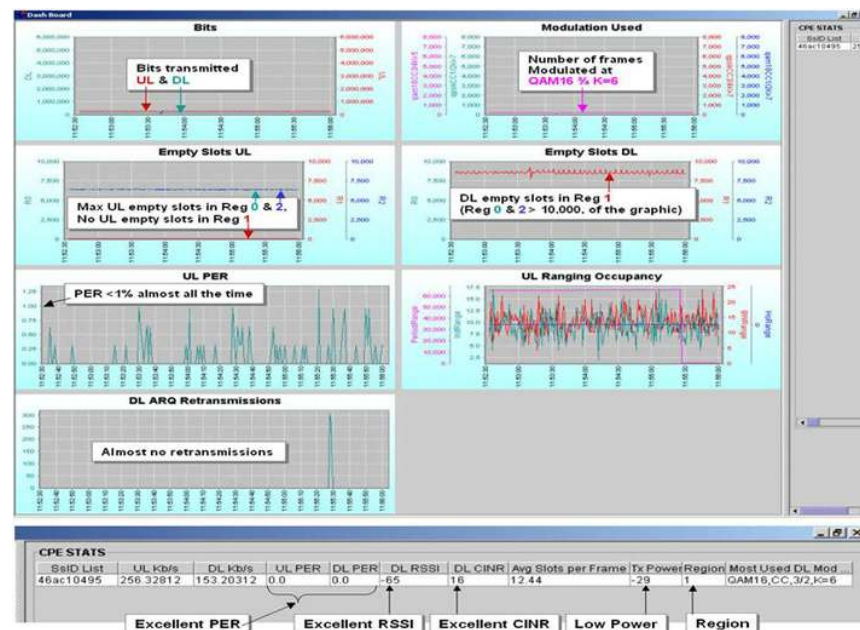
Figure 2. Cisco BWX EMX Base Station Alarm Management



- Alarm and network status display modes (BTS, SS and ASN-GW)
- Simple, intuitive severity indicators to alert craftsperson
- Alarm clearing and acknowledgement procedures built into EMS
- Log history for analysis

Diagnostic Management

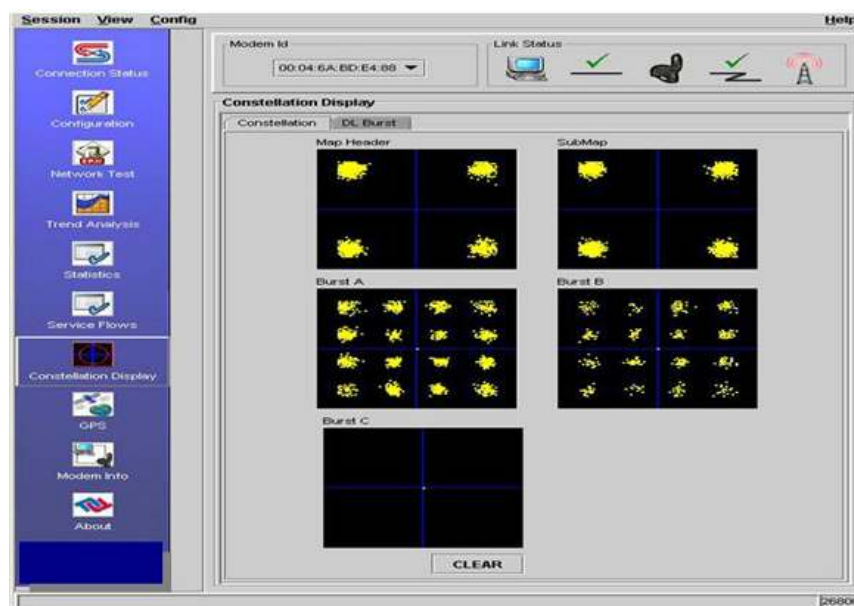
Figure 3. Cisco BWX EMS Diagnostic Management



- Comprehensive PHY/MAC and QoS metrics on a graphical display
 - Real-time beamforming capture and display
 - Signal Constellation display tool (adaptive modulation)
 - Dashboard capabilities for key performance indicators (KPI) for BTS, SS and ASN-GW
- Record/replay capabilities
- Cisco BWX Modem Diagnostics Tool
 - Local customer premise-based diagnostics
 - EMS-based remote diagnostics
- QoS diagnostics for the 5 defined Mobile WiMAX QoS classes: Best Effort (BE), Unsolicited Grant Service (UGS), real-time Polling Service (rtPS), non-real-time Polling Service (nrtPS), and extended real-time Polling Service (ertPS)

Performance Management

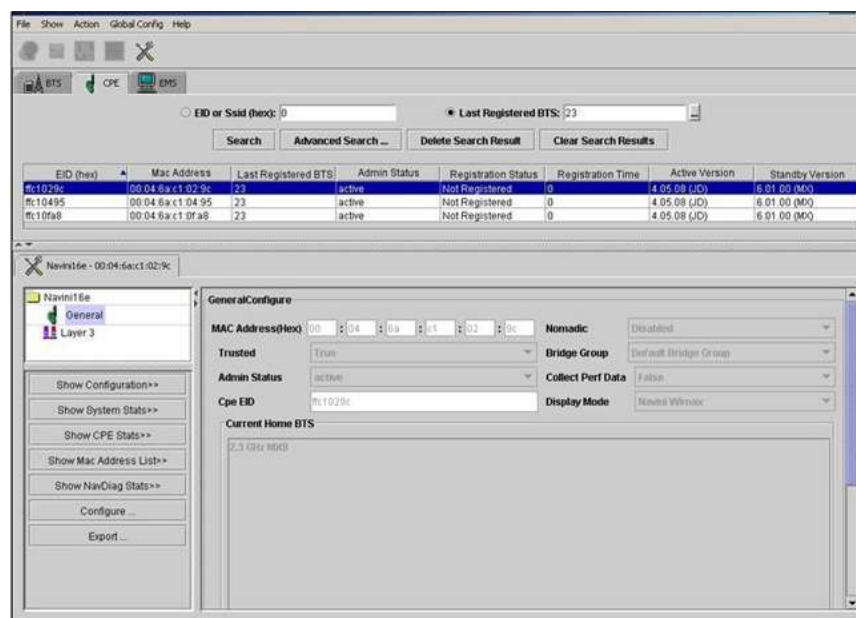
Figure 4. Cisco BWX EMS Performance Management



- Information to understand current performance
 - Periodic recording of metrics
 - Configurable to select key metrics for reporting
 - Provide real time trending and monitoring of KPIs for SS, BTS and ASN-GW
- Flexible control and configuration to optimize performance
 - Reports for amalgamation of metrics
- Remote collection using BWX performance server to collect KPI and perform long term trending of metrics and KPI

Load Management

Figure 5. Cisco BWX EMS Load Management



- Remote deployment of software loads to network elements (BTS, SS) to facilitate outage-free network upgrades
- Over-the-air modem software upgrades
- Bulk software upgrades for Cisco BWX 8300 and 2300 Systems

Product Specifications

Table 1 lists the specifications for the Cisco BWX EMS.

Table 1. Cisco BWX EMS Specifications

Unit	Specification
Platform	EMS server is Java-based; runs on Windows 2000/2003 Server and Solaris Server: Sun Solaris 8.0, Solaris 10.0
	EMS client is Java-based; runs on Windows 2000 Professional and Windows XP
Capacity	Supports up to 2000 Base stations and 16 Cisco Broadband Wireless Gateways (ASN-GWs)
Architecture	Scalable, distributed architecture
	Network-wide visibility (BTS, SS, BWG)
	Network (WAN) interface: 10/100 BASE-T
	Wizard-driven GUI plus CLI interfaces for all FCAPS functions
OSS Interfaces	CORBA 2.3 compliance, SNMPv2c
CORBA Services	CORBA naming services, event services, and messaging services for inter-working with network management systems
MIBs	RFC1213 (MIB-II)
	RFC1573 (IF-MIB)
	RFC1907 (SNMPv2-MIB)
	Cisco WiMAX MIB extensions
	SNMP-Framework-MIB
	SNMP-ETHERLIKE-MIB

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Additional Information

For more information about Cisco BWX EMS, or to place an order, contact your local account representative or visit: <http://www.cisco.com/go/bwx>.



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