



Cisco Web Element Manager Installation and Administration Guide

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Cisco Web Element Manager Installation and Administration Guide

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About this Guide

This document pertains to features and functionality that run on and/or that are related to the Cisco® ASR 5000 Chassis, formerly the Starent Networks ST40.

Conventions Used

The following tables describe the conventions used throughout this documentation.

Icon	Notice Type	Description
	Information Note	Provides information about important features or instructions.
	Caution	Alerts you of potential damage to a program, device, or system.
	Warning	Alerts you of potential personal injury or fatality. May also alert you of potential electrical hazards.
	Electro-Static Discharge (ESD)	Alerts you to take proper grounding precautions before handling a product.

Typeface Conventions	Description
Text represented as a <i>screen display</i>	This typeface represents displays that appear on your terminal screen, for example: Login:
Text represented as commands	This typeface represents commands that you enter, for example: show ip access-list This document always gives the full form of a command in lowercase letters. Commands are not case sensitive.
Text represented as a command variable	This typeface represents a variable that is part of a command, for example: show card slot_number slot_number is a variable representing the desired chassis slot number.
Text represented as menu or sub-menu names	This typeface represents menus and sub-menus that you access within a software application, for example: Click the File menu, then click New

Command Syntax Conventions	Description
{ keyword or <i>variable</i> }	Required keywords and variables are surrounded by grouped brackets. Required keywords and variables are those components that are required to be entered as part of the command syntax.

Command Syntax Conventions	Description
[keyword or <i>variable</i>]	Optional keywords or variables, or those that a user may or may not choose to use, are surrounded by square brackets.
	<p>With some commands there may be a group of variables from which the user chooses one. These are called alternative variables and are documented by separating each variable with a vertical bar (also known as a pipe filter).</p> <p>Pipe filters can be used in conjunction with required or optional keywords or variables. For example:</p> <pre>{ nonce timestamp }</pre> <p>OR</p> <pre>[count <i>number_of_packets</i> size <i>number_of_bytes</i>]</pre>

Contacting Customer Support

Use the information in this section to contact customer support.

For New Customers: Refer to the support area of <http://www.cisco.com> for up-to-date product documentation or to submit a service request. A valid username and password is required to this site. Please contact your local sales or service representative for additional information.

For Existing Customers with support contracts through Starent Networks: Refer to the support area of <https://support.starentnetworks.com/> for up-to-date product documentation or to submit a service request. A valid username and password is required to this site. Please contact your local sales or service representative for additional information.



Important: For warranty and repair information, please be sure to include the Return Material Authorization (RMA) tracking number on the outside of the package.

Chapter 1

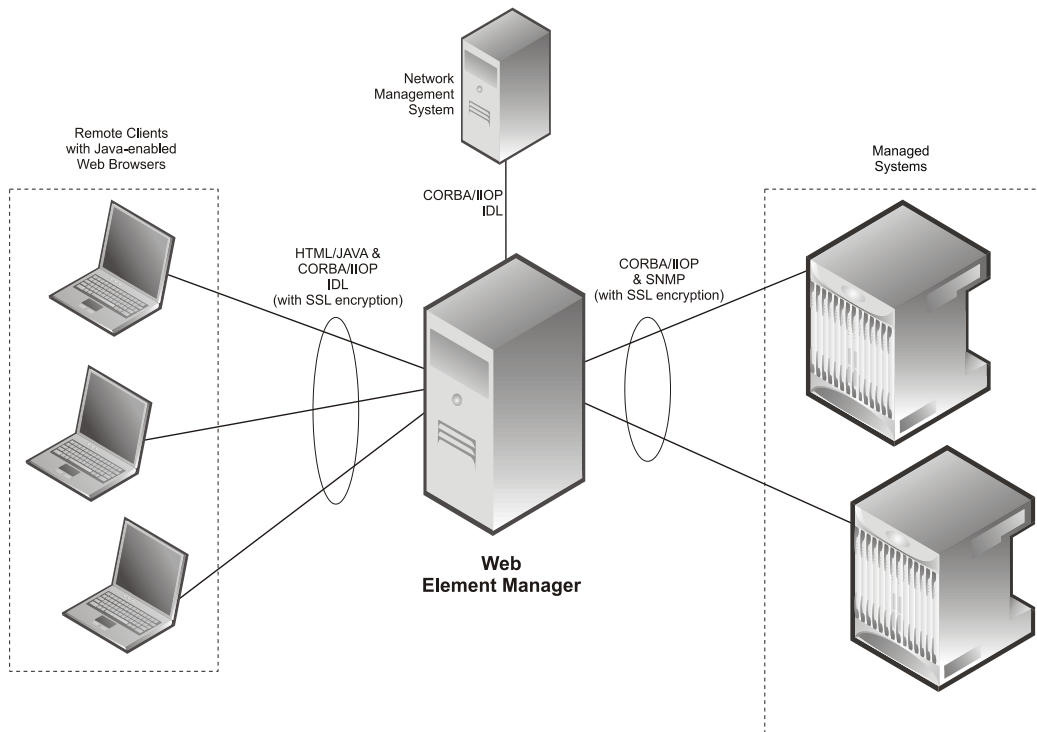
Web Element Manager Overview

Cisco Systems ASR 5000 is a powerful, service-enabling platform for mobile operators looking to provide a superior service experience for their subscribers. Part of the power and flexibility of the system is its robust, standards-based management application.

The Web Element Manager (WEM) is a Common Object Request Broker Architecture (CORBA)-based application that provides complete Fault, Configuration, Accounting, Performance, and Security (FCAPS) management capability for the system.

For maximum flexibility and scalability, the WEM application implements a client-server architecture. This architecture allows remote clients with Java-enabled web browsers to manage one or more systems via the server component which implements the CORBA interfaces. The server component is fully compatible with the fault-tolerant Sun® Solaris® operating system. For added security, management traffic can be encrypted using the Secure Sockets Layer (SSL) protocol.

Figure 1. Web Element Manager Network Interfaces



Supported Features

FCAPS Support

The Web Element Manager application provides Fault, Configuration, Accounting, Performance and Security (FCAPS) management functionality for the ASR 5000.

Fault Management

Fault management consists of an event logging function wherein all alarms, warnings, and other faults can be configured, reported, and acknowledged by network operations personnel.

The Simple Network Management Protocol (SNMP) is used by both the Web Element Manager and the chassis to report event notifications. The application's fault management system offers the following support for generated alarms:

- Provide mechanisms for viewing both current and pending alarms for both the ASR 5000 and the Web Element Manager server.
- Generate audio and visual alerts for alarms based on their severity (the Web Element Manager also supports the configuration of a severity level for each alarm).
- Maintain statistics for generated alarms.
- Store alarm information in the PostgreSQL® database.
- Execute scripts through the Script Server component of the application.
- Send E-mail notifications and/or forward notifications to Network Management Servers (NMSs) using a CORBA/IIOP-based Northbound Interface.
- Compliancy with the following standards:
 - TS 32.111-3, 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; Fault Management; Part 3: Alarm Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)
 - TS 32.303, 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)

Configuration Management

The Web Element Manager implements an easy to use, point-and-click GUI for providing configuration management for one or more systems. This GUI provides all the flexibility offered by the system's command Line Interface (CLI),

while providing the scalability of performing certain functions across multiple ASR 5000s. All configuration information is stored in the PostgreSQL Database.

At the system-level, the Web Element Manager application provides support for the following:

- Adding, modifying, or deleting systems to/from the management system
- Performing configuration of card and port-level parameters
- Adding, modifying, or deleting contexts
- Configuring specific protocols and services within defined contexts such as AAA servers, PDSN services, GGSN services, IP access lists, IP interfaces, IP routes, IP address pools, RADIUS accounting and authentication, PPP, subscribers, and others

At the network level, the application is capable of transferring configuration and/or software images to multiple systems simultaneously in advance to performing software upgrades.

The Web Element Manager supports the configuration of all parameters required to perform software upgrades including:

- Adding, deleting, and sorting system boot stack entries; these entries allow multiple fall-backs in the event the system experiences an error in the loading of a particular image or configuration file
- Configuring network options for bootup
- Transferring configuration and image files to/from ASR 5000 local devices
- Initiating and monitoring upgrade status

The Web Element Manager further simplifies the software upgrade process by providing tools for managing system configuration files:

- **Back-up Tool:** Enables the Web Element Manager to transfer a copy of the configuration file currently being used by a managed system at user-defined intervals. Files are transferred to the host server in a specific directory. The number of files to retain in the directory is also configurable. This tool provides a useful mechanism for testing configurations and/or quickly restoring a last-known-good configuration in the event of an error.
- **Compare Tool:** Provides a powerful tool for comparing the configuration files of two managed systems. Once the two files are specified, a dialog appears displaying the two documents side-by-side. Line numbers are added for convenience. Text additions, modifications, and deletions are displayed in different colors for easy recognition. This tool can be useful on its own to determine variations between multiple iterations of the same configuration file, or, when used in conjunction with the Back-up tool, it can provide an audit trail of configuration changes that occurred during system operation.

Accounting Management

Accounting management operations allow users to examine and perform post-process statistical analysis on systems managed by the Web Element Manager application.

The type of statistics used for element management-based accounting are called bulk statistics. Bulk statistics are grouped into categories called schemas and are polled by the system at fixed polling intervals and then transferred to the Web Element Manager at a different transfer intervals (defined in minutes).

Once the Web Element Manager server application, called the receiver, has received bulk statistics files from the managed system, these files are parsed and added to the PostgreSQL database. This database is updated as new files are received.

The Web Element Manager's accounting management functionality is compliant with *TS 32.401, 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; Performance Management (PM); Concept and requirements* and allows you to:

- Collect statistics pertaining to the transfer and collection of bulk statistics
- Views statistics stored on the chassis prior to transfer to the receiver
- Graph multiple received bulk statistics over time as either a line or bar graph; these graphs can be printed to network printers accessible by the server
- Generate eXtensible Markup Language (XML) files for transfer to a Northbound NMS or bulk statistics processor
- Archive collected bulk statistic information to conserve disk space on the server

Performance Management

Performance management operations supported by the Web Element Manager allow users to examine and perform real-time statistical analysis on systems managed by the application as well as on the server on which the application is running.

Information pertaining to various aspects of the Web Element Manager (CPU and memory utilization, disk space, and process status) and its managed systems (hardware, protocols, software subsystems, and subscribers) is collected in real time and is displayed in tabular format. Alternatively, most of the information can be graphed as a function of time in either line or bar-chart format. Multiple statistics can be graphed simultaneously for quick comparison of data.

In addition to collecting and providing mechanisms for the real-time viewing of statistical information, the Web Element Manager provides useful monitoring tools similar to those found in the CLI. These tools can be used to monitor active subscriber sessions, protocol flows, and port information. Data collected during this monitor operation can be saved to the client machine for further analysis.

Security Management

Security management pertains to the operations related to management users. This includes both Web Element Manager application users and local management users who are configured on the chassis. In many cases, management users can be allowed access to both the system (via its CLI) and the application. It is possible for both management user accounts to share the same username and password.

The security management features of the Web Element Manager allow you to:

- Add, modify, or delete administrative users for both the application and the managed system.

Regardless of the administrative user type, there are four levels of management user privileges:

- **Inspector:** Inspectors are limited to a small number of read-only Exec Mode commands. The bulk of these are “show” commands giving the inspector the ability to view a variety of statistics and

conditions. The Inspector cannot execute **show configuration** commands and do not have the privilege to enter the Config Mode.

- **Operator:** Operators have read-only privileges to a larger subset of the Exec Mode commands. They can execute all commands that are part of the inspector mode, plus some system monitoring, statistic, and fault management functions. Operators do not have the ability to enter the Config Mode.
- **Administrator:** Administrators have read-write privileges and can execute any command throughout the CLI except for a few security-related commands that can only be configured by Security Administrators. Administrators can configure or modify the system and are able to execute all system commands, including those available to the Operators and Inspectors.
- **Security Administrator:** Security Administrators have read-write privileges and can execute all CLI commands including those available to Administrators, Operators, and Inspectors.
- Provide authentication and privilege restoration based on the login information entered by administrative users.
- Monitor current system or application-level administrative users in real-time and optionally terminate their management session.
- Perform an audit of all managed system configurations performed through both the application and the CLI as well as other operations performed within the application.

The audit trail functionality supports the configuration of filters defining the type of operations to audit and also provides a dialog for performing the audit in real-time.

Audit trail results are stored in the PostgreSQL database for later retrieval and analysis.

The new Network Audit Tool functionality in WEM supports the on-demand or periodic auditing of chassis configuration attributes such as PPP MRU, Auth Sequence, Bulkstats Schema Needs Update, etc.

Additional Features

Additional features provided by the Web Element Manager application include:

- **Management integration capabilities**

Utilizing the Object Management Group's (OMG) standard CORBA northbound interface, the Web Element Manager application can be integrated with higher-level TMN-modeled applications such as network, business, and service layer applications. The OMG's Interface Definition Language (IDL) can be used to develop custom interfaces to various other third-party components such as Application Servers, etc.

- **Database management and redundancy support**

All databases used for audit trail, performance and statistical information, event management, and device inventory information will be stored on the Web Element Manager server using the UNIX file system.

In the event of a server failure, a backup server could quickly access the latest configuration, inventory, and other information.


- **Multiple language support**

The Web Element Manager provides the ability for users to select a specific language the information is provided in. The currently supported languages include U.S. English and Korean.

- **Context-sensitive Help system**


The Web Element Manager has a complete web-based Help system that provides user assistance for every screen and function available within the application. This Help system resides on the Web Element Manager server and is accessible from any supported client workstation.

Web Element Manager System Requirements


 **Important:** The hardware required for the Web Element Manager server may vary, dependent upon the number of chassis being managed, the number of clients that require access, and other variables. This minimum configuration has been tested to support up to 30 Web Element Manager clients, managing up to 25 chassis.

Server Application


- Sun Microsystems Netra™ T5220 server
- 1 x 1.2GHz 8 core UltraSPARC T2 processor with 32GB RAM
- 2 x 146GB SAS hard disk drives
- Quad Gigabit Ethernet interfaces
- Internal DVD-ROM drive
- AC or DC power supplies depending on the application
- Operating Environment:

 **Important:** It is recommended that users ensure all recommended patches are installed before performing a new installation or software upgrade.


- Solaris 8 with Recommended Patch Cluster dated on or after April 2006


 **Important:** Users based in the United States should ensure that the timezone patch 109809-05 (or later) and libc patch 108993-52 (or later) be installed in support of extended daylight savings time (DST) support.

- Solaris 9 with Recommended Patch Cluster dated on or after April 2006

 **Important:** Users based in the United States should ensure that the timezone patch 113225-07 (or later) and libc patch 112874-33 (or later) be installed in support of extended daylight savings time (DST) support. In addition, if Solaris 9 is used, it must be installed using the “End User System support 64-bit” software group must be specified during the installation of the operating system. This option installs the libraries required for proper operation of the Web Element Manager.


- Solaris 10 with Recommended Patch Cluster dated on or after July 16, 2007 and not later than Nov 2008. Also make sure that the kernel patch released between 137137-09 and 142900-04 should not be installed. Upgrade the kernel to 142900-04 patch or stick with 137137-09 (or lower) patch

 **Important:** Solaris 10 Kernel patch released between 137137-09 and 142900-04 may result in kernel panic while executing/invoking system calls.


 **Important:** If you plan to install software and maintain the Web Element Manager application and server remotely, it is recommended that you use an X-Windows client.

Client Access

- Workstation supporting Solaris/Sun, Linux, UNIX, Microsoft Windows XP, Windows 2000, Windows 7 or Windows NT operating system
- Java Runtime Environment (JRE) version 1.5 or 1.6

 **Important:** It is recommended that users should use JRE 1.4.2_11 (or later) or 1.5 update 6 (or later).

- Java policy file (obtained during initial access to the Web Element Manager server)
- Microsoft Internet Explorer version 5.0 (or higher), Netscape Navigator version 4.72 (or higher), or other Internet browser
- Access to the Web Element Manager server's host network

 **Important:** Web Element Manager clients cannot access the Web Element Manager server if the server is separated by an NAT'd firewall or other device that restricts access between the client workstation and server.

- Configured application user account on Web Element Manager server

WEM Architecture

The WEM architecture consists of the following components:

- [Host Filesystem](#)
- [Apache Web Server](#)
- [WEM Server FCAPS Support](#)
- [WEM Process Monitor](#)
- [Bulk Statistics Server](#)
- [Script Server](#)
- [PostgreSQL Database Server](#)
- [WEM Logger](#)

Host Filesystem

Running on the fault-tolerant Sun Solaris operating system, the WEM uses the native filesystem for such things as creating and writing to log files, storing alarm and bulk statistic-related information, and configuration file management.

Apache Web Server

Remote clients interface with the WEM by establishing session with the server using the Hyper Text Transport Protocol (HTTP). The session is hosted by the Apache Web Server which launches a Java applet providing a graphical user interface for managing the system. When HTTPS is mentioned in the URL instead of HTTP, secure connection is established between the WEM client and WEM server. The Apache Web Server is also used to execute Common Gateway Interfaces (CGIs) invoked by the applet using CORBA/Internet Inter-ORB Protocol (IIOP).

WEM Server FCAPS Support

This component provides Fault, Configuration, Accounting, Performance, and Security (FCAPS) functionality.

Fault Management

Fault management consists of an event logging function wherein all alarms, warnings, and other faults can be configured, reported, and acknowledged by network operations personnel.

The Simple Network Management Protocol (SNMP) is used by both the Web Element Manager and the ASR 5000 to report event notifications. The application's fault management system offers the following support for generated alarms:

- Provide mechanisms for viewing both current and pending alarms for both the ASR 5000 and the Web Element Manager server.
- Generate audio and visual alerts for alarms based on their severity (the Web Element Manager also supports the configuration of a severity level for each alarm).
- Maintain statistics for generated alarms.
- Store alarm information in the PostgreSQL® database.
- Execute scripts through the Script Server component of the application.
- Send E-mail notifications and/or forward notifications to Network Management Servers (NMSs) using a CORBA/IIOP-based Northbound Interface.
- Compliance with the following standards:
 - TS 32.111-3, 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; Fault Management; Part 3: Alarm Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)
 - TS 32.303, 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)

Configuration Management

The Web Element Manager implements an easy to use, point-and-click GUI for providing configuration management for one or more systems. This GUI provides all the flexibility offered by the system's command Line Interface (CLI), while providing the scalability of performing certain functions across multiple ASR 5000s. All configuration information is stored in the PostgreSQL Database.

At the system-level, the Web Element Manager application provides support for the following:

- Adding, modifying, or deleting systems to/from the management system
- Performing configuration of card and port-level parameters
- Adding, modifying, or deleting contexts
- Configuring specific protocols and services within defined contexts such as AAA servers, PDSN services, GGSN services, IP access lists, IP interfaces, IP routes, IP address pools, RADIUS accounting and authentication, PPP, subscribers, and others

At the network level, the application is capable of transferring configuration and/or software images to multiple systems simultaneously in advance to performing software upgrades.

The Web Element Manager supports the configuration of all parameters required to perform software upgrades including:

- Adding, deleting, and sorting system boot stack entries; these entries allow multiple fall-backs in the event the system experiences an error in the loading of a particular image or configuration file

- Configuring network options for bootup
- Transferring configuration and image files to/from ASR 5000 local devices
- Initiating and monitoring upgrade status

The Web Element Manager further simplifies the software upgrade process by providing tools for managing system configuration files:

- **Back-up Tool:** Enables the Web Element Manager to transfer a copy of the configuration file currently being used by a managed system at user-defined intervals. Files are transferred to the host server in a specific directory. The number of files to retain in the directory is also configurable. This tool provides a useful mechanism for testing configurations and/or quickly restoring a last-known-good configuration in the event of an error.
- **Compare Tool:** Provides a powerful tool for comparing the configuration files of two managed systems. Once the two files are specified, a dialog appears displaying the two documents side-by-side. Line numbers are added for convenience. Text additions, modifications, and deletions are displayed in different colors for easy recognition. This tool can be useful on its own to determine variations between multiple iterations of the same configuration file, or, when used in conjunction with the Back-up tool, it can provide an audit trail of configuration changes that occurred during system operation.

Accounting Management

Accounting management operations allow users to examine and perform post-process statistical analysis on systems managed by the Web Element Manager application.

The type of statistics used for element management-based accounting are called bulk statistics. Bulk statistics are grouped into categories called schemas and are polled by the system at fixed polling intervals and then transferred to the Web Element Manager at a different transfer intervals (defined in minutes).

Once the Web Element Manager server application, called the receiver, has received bulk statistics files from the managed system, these files are parsed and added to the PostgreSQL database. This database is updated as new files are received.

The Web Element Manager's accounting management functionality is compliant with *TS 32.401, 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; Performance Management (PM); Concept and requirements* and allows you to:

- Collect statistics pertaining to the transfer and collection of bulk statistics
- Views statistics stored on the ASR 5000 prior to transfer to the receiver
- Graph multiple received bulk statistics over time as either a line or bar graph; these graphs can be printed to network printers accessible by the server
- Generate eXtensible Markup Language (XML) files for transfer to a Northbound NMS or bulk statistics processor
- Archive collected bulk statistic information to conserve disk space on the server

Performance Management

Performance management operations supported by the Web Element Manager allow users to examine and perform real-time statistical analysis on systems managed by the application as well as on the server on which the application is running.

Information pertaining to various aspects of the Web Element Manager (CPU and memory utilization, disk space, and process status) and its managed systems (hardware, protocols, software subsystems, and subscribers) is collected in real time and is displayed in tabular format. Alternatively, most of the information can be graphed as a function of time in either line or bar-chart format. Multiple statistics can be graphed simultaneously for quick comparison of data.

In addition to collecting and providing mechanisms for the real-time viewing of statistical information, the Web Element Manager provides useful monitoring tools similar to those found in the CLI. These tools can be used to monitor active subscriber sessions, protocol flows, and port information. Data collected during this monitor operation can be saved to the client machine for further analysis.

Security Management

Security management pertains to the operations related to management users. This includes both Web Element Manager application users and local management users who are configured on the chassis. In many cases, management users can be allowed access to both the system (via its CLI) and the application. It is possible for both management user accounts to share the same username and password.

The security management features of the Web Element Manager allow you to:

- Add, modify, or delete administrative users for both the application and the managed system.
- Regardless of the administrative user type, there are four levels of management user privileges:
 - **Inspector:** Inspectors are limited to a small number of read-only Exec Mode commands. The bulk of these are “show” commands giving the inspector the ability to view a variety of statistics and conditions. The Inspector cannot execute **show configuration** commands and do not have the privilege to enter the Config Mode.
 - **Operator:** Operators have read-only privileges to a larger subset of the Exec Mode commands. They can execute all commands that are part of the inspector mode, plus some system monitoring, statistic, and fault management functions. Operators do not have the ability to enter the Config Mode.
 - **Administrator:** Administrators have read-write privileges and can execute any command throughout the CLI except for a few security-related commands that can only be configured by Security Administrators. Administrators can configure or modify the system and are able to execute all system commands, including those available to the Operators and Inspectors.
 - **Security Administrator:** Security Administrators have read-write privileges and can execute all CLI commands including those available to Administrators, Operators, and Inspectors.
- Provide authentication and privilege restoration based on the login information entered by administrative users.
- Monitor current system or application-level administrative users in real-time and optionally terminate their management session.
- Perform an audit of all managed system configurations performed through both the application and the CLI as well as other operations performed within the application.

The audit trail functionality supports the configuration of filters defining the type of operations to audit and also provides a dialog for performing the audit in real-time.

Audit trail results are stored in the PostgreSQL database for later retrieval and analysis.

The new Network Audit Tool functionality in WEM supports the on-demand or periodic auditing of chassis configuration attributes such as PPP MRU, Auth Sequence, Bulkstats Schema Needs Update, etc.

ANSI T1.276 Compliance

The WEM supports ANSI standard T1.276, providing a set of baseline security features to help mitigate security risks in the management of telecommunication networks. New users will be sent a randomly generated password automatically, and will be prompted to provide a new password upon first login. New passwords must meet strict requirements to comply with the ANSI standard:

- Passwords must be a minimum of eight characters long.
- Passwords must not be a repeat or the reverse of the associated user ID.
- Passwords must not be more than three of the same characters used consecutively.
- Passwords must contain at least three of the following character types:
 - At least one lower case alpha character
 - At least one upper case alpha character
 - At least one numeric character
 - At least one special character

Users will also be required to change passwords after a configurable number of days, and will be barred from reusing the same password for a configurable number of password change cycles. Too many failed login attempts will result in an account lockout, which may be removed either by an administrator or by waiting for a defined period of time to elapse.

WEM Process Monitor

The Process Monitor (PSMon) is a Perl script that monitors the status of processes pertaining to the WEM application.

The script is a plain text Apache-style configuration file that allows the user to define a set of rules. These rules describe what processes should always be running on the system, any limitations on concurrent instances, Time-To-Live (TTL), and maximum CPU/memory usage of processes. It can be run as a stand alone program or a fully functional background daemon.

PSMon scans the UNIX process table and, using the set of defined rules, will re-spawn any dead processes, and/or slay or “deal with” any aggressive or illegal processes. The number of retries and time interval the PSMon scans the table is configurable meaning that it will never try to start the process if 'number of retries' exceeds in given time interval.

PSMon logs events to syslog and to a log file and is equipped with customizable e-mail notification facilities.

Bulk Statistics Server

The Bulk Statistics Server process is responsible for collecting and processing all bulk statistic-related information from the system as part of the WEM’s accounting management functionality.

The Bulk Statistics Server parses collected statistics and stores the information in the PostgreSQL database. If XML file generation and transfer is required, this element generates the XML output and can send it to a Northbound NMS or an alternate bulk statistics server for further processing.

Additionally, if archiving of the collected statistics is desired, the Bulk Statistics server writes the files to an alternative directory on the server. A specific directory can be configured by the administrative user or the default directory can be used. Regardless, the directory can be on a local filesystem or on an NFS-mounted filesystem on the WEM server.

Script Server

The WEM supports the ability to configure the properties for alarms. One of the properties that can be configured is specifying a script that can be executed upon receipt of that alarm. The Script Server process is responsible for executing the specified script.

Upon receipt of the alarm, the WEM Server FCAPS Support function passes the name of the script to execute and the trap logged time to the Script Server. An acknowledgement is sent and the script is executed by the Script Server. In the event, an error is experienced while executing the script, the Script Server generates an SNMP trap.

PostgreSQL Database Server

The PostgreSQL Database consists of multiple databases maintaining information pertaining to the following WEM functions:

- **Configuration:** This database contains tables which maintain configuration information for user details, topology for maps and manageable systems.
- **Trap:** This database contains tables which maintain SNMP trap configuration information and all the received SNMP traps.
- **MIB:** This database contains all the information required to translate SNMP Object identifiers to proper MIB names and their types as given in the MIB file.
- **Audit Trail:** This database contains table that maintains the configuration trail including the following:
 - Configuration performed on each system through the WEM
 - Configuration done through the system's CLI (this is known via the CORBA notification service)
 - Login/out from the WEM and system CLI
 - The addition/deletion of a new system in the managed system list
- **Bulk Statistics:** This database contains various tables containing counter values periodically received from the system via the File Transfer Protocol (FTP).

WEM Logger

The WEM application generates and stores logs pertaining to server installation and operation. The logs can be stored locally or to another server. In addition, the WEM provides enhanced logging functionality for customizing log output and log files.

Chapter 2

WEM Port and Hardware Information

This chapter provides information on various ports and their corresponding port numbers used by the WEM, and hardware sizing requirements of the WEM application.

This chapter includes the following topics:

- [Web Element Manager Network Considerations](#)
- [Default TCPUDP Port Utilization](#)
- [WEM Server Hardware Sizing and Provisioning Guidelines](#)

Web Element Manager Network Considerations

To ensure proper installation and operation of the WEM, the following network considerations must be implemented:

- The WEM server and the ASR 5000 chassis must be located on the same network.
- The Network Address Translation (NAT) protocol should not be used between the system and WEM server.
- If there is a firewall installed between the WEM server and the system, then the port used by the WEM to access the system must be opened. Refer to the [Default TCP/UDP Port Utilization](#) section for additional information.
- The WEM server must be able to send and receive Ping and ICMP packets from the system.
- Configured application user account on WEM server.

Default TCP/UDP Port Utilization

Various TCP/UDP ports are used by the WEM for both client-server communication and communication with managed systems. If firewalls are used on these interfaces, these ports need to be opened. The following table lists the ports for which firewall must allow access for a port on that communication path.

Table 1. Default TCP/UDP/ICMP Port Utilization with firewall

Port Number	Communication Type	Usage
TCP Port:		
20 to 21	<ul style="list-style-type: none"> WEM Server to ASR 5000 ASR 5000 to WEM Server WEM Server to NMS 	Used by FTP server to transfer Bulkstats and in case of software upgrade, Config-backup, Config-update scheduler.
22	<ul style="list-style-type: none"> WEM Server to ASR 5000 ASR 5000 to WEM Server WEM Server to NMS 	Used by SSH or SFTP server for Config-backup, expect scripts.
80	WEM Client to WEM Server (Unsecured)	Used by Apache server for downloading the WEM applet and property files. This port is configurable.
443	WEM Client to WEM Server (Secured)	Used by Apache server for downloading the WEM applet and property files under secured connection. This port is configurable.
14131 to 14132	WEM Server to ASR 5000	Used for CORBA communication. These ports are configurable.
15000 to 15011	<ul style="list-style-type: none"> WEM Client to WEM Server ASR 5000 to WEM Server 	Used for WEM client - server communication. WEM server receives requests on these ports from client. The ASR 5000 also sends notifications to the WEM server. The base port is configurable.
15015	NMS to WEM Server	Used by NorthBound server to receive requests on this port from NMS (3GPP standard CORBA NorthBound Interface).
15017	WEM Server to NMS	Used by CORBA Notification service for sending notifications to NMS (3GPP standard CORBA NorthBound Interface).

■ Default TCP/UDP Port Utilization

Port Number	Communication Type	Usage
40000 to 40010	WEM Server to WEM Client	Used for WEM server - client communication. The notifications such as alarms, config changes, monitor protocol, real-time graphs are done by WEM server to WEM client.
UDP Port:		
69	ASR 5000 to WEM Server	Used by TFTP server. If the WEM server machine has the ASR 5000 image/config and if they are to be loaded using TFTP, then this port will be used.
162	ASR 5000 to WEM Server	Default port on which WEM receives SNMP traps from ASR 5000. This port is configurable.
514	ASR 5000 to WEM Server	Used by Syslog server. WEM server machine may be configured to act as a syslog server for the ASR 5000 logs.
ICMP Port:		
-	WEM Server to ASR 5000	WEM server to ASR 5000 keep-alive

The following table lists the ports used by WEM for which there is no need for any firewall to open that port.

Table 2. Default TCP/UDP/ICMP Port Utilization


Port Number	Usage
TCP Port:	
5432	Used by PostgreSQL server for accepting SQL queries from various WEM processes.
22222	Used by WEM Server as "identity" port and is configurable.
22223	Used by Bulkstat Server (XML generator) as "identity" port and is configurable.
22224	Used by Bulkstat Parser as "identity" port and is configurable.
22225	Used by Script Server as "identity" port and is configurable.

WEM Server Hardware Sizing and Provisioning Guidelines

In addition to the minimum system requirements provided in the previous section, the following guidelines offer information that can help you plan hardware sizing needs, based on the exact deployment scenario that you will be using.

The information provided in this section is based on a typical installation that has the following characteristics:

- The WEM server application can manage up to 25 systems.
- No more than 30 clients will be accessing the WEM server simultaneously.
- The WEM application and the server it resides on are used to:
 - Receive, process, correlate, and store SNMPv1 traps sent from the managed system. This operation involves the use of the event database, controlled by the PostgreSQL database engine, and any e-mail notifications configured for each alarm.
 - Receive, process, and store Bulk Statistics information received from the managed system. This operation involves the use of the bulkstats database, controlled by the PostgreSQL database engine.
 - Receive, display, and graph real-time Performance information for any number of statistical counters and polling periods.
 - Administer WEM and CLI management users. This includes the addition, modification, and deletion of WEM-based management users, stored in the users database, controlled by the PostgreSQL database engine.
 - Store, retrieve, and perform various configuration management operations on the managed system. This includes the storage and transfer (via FTP) of binary software images, configuration text files, and session license and feature use keys.
- **Hard Drive Partition Recommendations:**
 - The WEM should not be installed in the root (/) partition.
 - The root partition (/) should be at least 1 gigabyte (GB).
 - The /usr partition should be at least 1 GB.
 - The /var partition should be at least 8 GB.
 - The swap partitions should be at least 10 GB.
 - The size of the partition on which the WEM is installed will depend on a variety of site-specific factors, including the number of ASR 5000s to be managed, the average bulkstat file size, the bulkstat file transfer interval, the number of configuration changes per day per ASR 5000 and other considerations. Cisco provides a WEM Sizing Calculator utility to assist with these estimates. Please contact your local Cisco representative during the sizing phase of the planning process to obtain assistance on hard drive partition and disk space estimates for the WEM application.

 **Important:** It is strongly recommended that the WEM application, the Apache web server application, and the PostgreSQL database engine be configured in the same logical hard disk partition.

Chapter 3

Installing the WEM Software

This chapter provides the step-by-step procedure of installing WEM application using the GUI-based installation wizard and the console-based installation. Additionally it provides instructions that need to be followed before starting the WEM installation so that it completes successfully.

This chapter includes the following topics:

- [Before You Begin](#)
- [Setting the PostgreSQL Database System Environment Configurations](#)
- [Unpacking the Installation Files](#)
- [Determining the Best Installation Method](#)
- [Installing the WEM Software using the GUI-Based Installation Wizard](#)
- [Installing the WEM Software using the Console-Based Installation Method](#)
- [Configuring IPMP on WEM Server](#)

Before You Begin

Prior to performing the installation procedure, this section previews each step to ensure that you're ready to successfully complete the installation. Detailed installation instructions follow.

Step 1 - Verifying Hardware Status

The first thing that you need to do is to ensure that the WEM server hardware has been provisioned properly for your application. This includes:

- Verifying the correct operating system. This can be accomplished by entering the **uname -a** command.
- Verifying that the hard disk has been partitioned properly using the recommendations outlined in the *WEM Server Hardware Sizing and Provisioning Guidelines* section of the [WEM Port and Hardware Information](#) chapter.
- Verifying network connectivity through the management LAN.

Step 2 - Setting the WEM Server's Database Environment Strings

This step is required to configure how the PostgreSQL database engine processes, stores, and retrieves information contained in the various databases stored using the UNIX file subsystem. Failure to configure these settings may cause data loss and will minimally cause errors in the WEM's operation.


Step 3 - Unpacking the WEM Application Files

WEM installation files are distributed as a single compressed file. Once the file is obtained, it must be copied to the server and unpacked. It is recommended that you copy the file to a temporary directory on the server.

Step 4 - Installing the WEM Software


This step consists of choosing the desired installation method (console-based or the Graphical User Interface (GUI-based)) and performing the physical installation onto the WEM server. There are three software components that are installed as part of this procedure. They are:

- WEM software
- Apache Web Server software
- PostgreSQL database engine software

 **Important:** If you are installing the WEM to upgrade an existing version that is currently installed and running, proceed to [Upgrading the WEM Software](#) chapter of this guide.

Step 5 - Configuring WEM Client Session Management Parameters


There are numerous client session management parameters that control how many client sessions may be simultaneously accessed, idle timeout periods, and various other client-related items. This configuration file, which resides on the WEM server, should be modified (if needed) prior to starting the WEM server processes.

 **Caution:** Failure to perform the WEM server startup procedure in the exact order shown in this document may prevent the application from initializing and working properly.

Step 6 - Configuring IP Multipathing (IPMP) on WEM Server (Optional)

IPMP, or IP multipathing, is a facility provided by Solaris® to provide physical interface failure detection and transparent network access failover for a system with multiple interfaces on the same IP link. IPMP also provides load spreading of packets for systems with multiple interfaces.

For IPMP configuration, refer to the [Configuring IPMP on WEM Server](#) section.

 **Important:** IPMP is a feature supported on Sun® Solaris® provided by Sun Microsystems. The configuration is included in *Section VI* of the *System Administration Guide: IP Services* from Sun Microsystems. For more information, refer to the Sun documentation

Setting the PostgreSQL Database System Environment Configurations

Prior to installing the WEM application onto the WEM server hardware, there are numerous system environment configuration settings that should be configured. While PostgreSQL will be installed during the GUI-based installation procedure, these settings must be configured manually.

Unpacking the Installation Files

WEM installation files are distributed as a single compressed file with a “.tar.gz” extension.

Once the installation file has been copied to the server, use the following procedure to unpack the file.

Step 1 Go to the directory in which the file is stored.

Step 2 Unzip the file by entering the following command:

```
gunzip file_name.tar.gz
```

file_name is the name of the WEM application installation file.

Step 3 Un-tar the file by entering the following command:

```
tar -xvf file_name.tar
```

Determining the Best Installation Method

The WEM and its ancillary components such as the Apache web server and PostgreSQL database engine, may be installed in one of the following two methods.

- **GUI-based method:** This method is the most commonly used installation procedure. Requirements for using this method include:
 - Logon account to the WEM server with display terminal (monitor) attached and some X-Windows client installed on the server.
 - Network connectivity to WEM server via Telnet or SSH, using some X-Windows client on a remote workstation.
- **Console-based method:** This method is available to users who do not have an X-Windows client available for remote network connectivity to the WEM server via Telnet or SSH.

Installing the WEM Software using the GUI-Based Installation Wizard

Follow the instructions below to install the WEM using the GUI-based installation wizard.

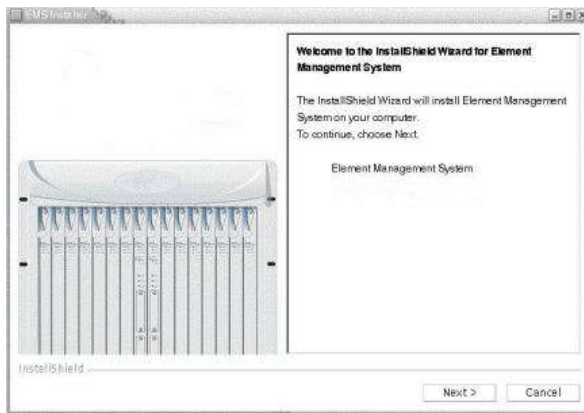
Important: If you are installing the WEM to upgrade an existing version that is currently installed and running, proceed to the [Upgrading the WEM Software](#) chapter of this guide.

Step 1 Go to the directory in which the WEM installation files are located.

Step 2 Execute the setup file by entering the following command:

```
./inst
```




The following WEM Installer dialog appears:





Step 3 Click **Next** to proceed.






Step 4 Follow the on-screen prompts to progress through the various installation dialogs and configure the parameters as required. Refer to the following table for descriptions of the configurable parameters on each of the installation dialogs.



Parameter	Description	Default Value
System Setting for Postgres		
N/A	This dialog or script section is informational and contains no configurable parameters. Information pertaining to these variables is located in the Setting the PostgreSQL Database System Environment Configurations section in this chapter.	N/A
EMS Installation Mode		




Parameter	Description	Default Value
Standalone EMS	<p>This dialog or script section determines how the installation will proceed depending on the type of environment the EMS will be running in.</p> <hr/> <p> Important: At this time, only the Standalone EMS installation mode is available. Future releases will support a Scalable installation mode and a Failover installation mode that requires a Sun Cluster setup.</p>	Enabled
Destination directory for Element Management System		
Directory Name	The directory on the server in which the WEM is to be installed. The directory can be manually entered in the field provided or selected using the Browse function.	/<ems_dir>/ which is /users/ems by default
Global Configuration		
Select the IP Address	Choose this option to select one of the server IP addresses automatically detected by the WEM installation process. For the GUI-based installation, the IP address is selected from the drop-down menu.	Null
Enter the IP Address	<p>Choose this option to manually specify an IP address. This option can be used to specify an address that has not yet been configured on the server. The IP address must be entered in the field provided.</p> <hr/> <p> Important: The IP address specified must be ICMP reachable.</p>	Null
SSL Configuration		
Enforce SSL	<p>If this option is selected, then the Secure Sockets Layer (SSL) connection is established for client-to-server and server-to-boxer communication. By default, the SSL encryption feature is enabled.</p> <hr/> <p> Important: If the Enforce SSL option is enabled, the configuration settings for the chassis should be changed as needed.</p>	Enabled
Content Filtering / Blacklisting Configuration		
Enable Content Filtering	Select this option to enable the content filtering service on WEM. This option when enabled allows the user to configure the Master Content Rating Database Server (MCRDBS) and Central Decision Point (CDP). By default, this option is enabled.	Enabled
Enable Blacklisting	Select this option to enable the blacklisting feature on WEM. If this option is enabled, the WEM pulls the files containing the blacklisted URLs from external agency, converts them into binary format and then pushes it to the CDP.	Enabled
EMS Client Configuration		
Fixed Port Range		


Parameter	Description	Default Value
Fixed Port	<p>There are a number of applications on the WEM that require event notifications such as graphing, protocol monitoring, Front and Rear view (FRV) screens, alarms, and software upgrades. Each one requires a dedicated port for itself.</p> <p>Select this option if the WEM Server is to send requests (notifications) to WEM Clients on fixed ports.</p> <p>This is useful if a firewall exists between the Server and the Client. The assigned ports can be opened in the firewall to allow notifications.</p> <p>By default, if enabled, the Server uses a block of 11 ports beginning with the port number specified in by Start Port. If this option is not enabled, the operating system randomly selects open ports for use.</p>	Disabled
Start Port	<p>If the Fixed Port option is enabled, this parameter specifies the initial port number to use for the block of consecutive fixed ports.</p> <p>The port can be configured to any integer value from 1 through 65535.</p> <hr/> <p> Important: Ports 1 to 1024 are reserved and should not be used.</p>	40000
End Port	<p>If the Fixed Port option is enabled, this parameter specifies the last port number to use for the block of consecutive fixed ports.</p> <p>The port can be configured to any integer value from 1 through 65535.</p> <hr/> <p> Important: Ports 1 to 1024 are reserved and should not be used.</p>	40010
Content Filtering Configuration		
Master Content Rating Database (MCRDBS):		
MCRDBS User Name	Enter a username for the MCRDBS in the field provided.	Null
MCRDBS Password	Enter a password for the MCRDBS user in the field provided. The password is case sensitive.	Null
MCRDBS Host IP Address	Enter the host IP address of the MCRDBS to which Content Filtering server statistics files are to be sent.	Null
MCRDBS Host Name	Enter the host name for an MCRDBS server in the field provided.	Null
Full Database Import Interval(Hrs)	Enter the time interval in hours for Content Filtering Server to import various databases from MCRDBS (Databases: SFMDB). The range is from 2 to 4320 hours.	24
Incremental Database Import Interval(Hrs)	Enter the time interval in hours for Content Filtering Server to import various databases from MCRDBS (Databases: SFMDB-INC). The range is from 2 to 720 hours.	24
Full Database Backup Limit (number)	Enter the backup limit for full databases.	4



Parameter	Description	Default Value
Incremental Database Backup Limit(Days)	Enter the backup limit in days for incremental databases.	30
Full Database Import Path	Enter the path to locate the SFMDB files in MCRDBS. For example: <Mcrdbms server path>/cfems/<cfems ip address>/sfmdb	Null
Incremental Database Import Path	Enter the path to locate the SFMDB-INC files in MCRDBS. For example: <MCRDBS server path>/cfems/<cfems ip address>/sfmincdb	Null
Archive Database Files	Select 1 if you want to archive the database files.	1
Central Decision Point (CDP):		
CDP User Name	Enter a username for the CDP in the field provided.	Null
CDP Password	Enter a password for the CDP user in the field provided. The password is case sensitive.	Null
CDP Host Name	Enter the CDP host name in the field provided.	Null
CDP Host IP Address	Enter the host IP address of the CDP to which CDP statistics files are to be sent.	Null
Optimized Database Export Interval(Hrs)	Enter the time interval in hours for Content Filtering Server to export the OPTCMDB files to CDP. The range is from 2 to 4320 hours.	72
Optimized Incr Database Export Interval(Hrs)	Enter the time interval in hours for Content Filtering Server to export the OPTCMDB incremental files to CDP. The range is from 2 to 720 hours.	24
Optimized Database File Export Path	Enter the path for Content Filtering Server to export the OPTCMDB files to CDP.	Null
Trap Configuration	Select 1 to enable trap notifications.	1
Blacklisting Configuration		
NCMEC Configuration:		
URL	Enter the cumulative.csv file path at NCMEC.	Null
User Name	Enter the username required for authentication at the NCMEC site.	Null
Password	Enter the password required for authentication at the NCMEC site.	Null
Import interval(Hrs)	Enter the cumulative.csv file import interval in hours.	24
Export to CDP interval(Hrs)	Enter the time interval in hours for Content Filtering Server to export OPTCMDB-BL to CDP. The range is from 1 to 5 hours.	2
Apache Server Configuration		
Apache Port (HTTP)	Enter the TCP port that the Apache web server communicates on in the field provided. Enter the port number as an integer, ranging from 0 through 65535.	80



Parameter	Description	Default Value
Apache Port (HTTPS)	<p>Enter the TCP port that the Apache web server communicates securely on in the field provided. Enter the port number as an integer, ranging from 0 through 65535.</p> <hr/> <p> Important: Apache port HTTP and HTTPS both should be different to establish the successful connection between WEM client and WEM server.</p>	443
Administrator Email-ID	Enter an e-mail address for the web server administrator in the field provided. Use the <i>username@domain</i> format.	root@localhost
EMS Server Configuration		
IMG Session Management (ISM):		
Corba Communication Port	<p>Enter the TCP port over which CORBA communication occurs with the system in the field provided.</p> <hr/> <p> Important: This field will not be displayed if the Enforce SSL parameter in the SSL Configuration panel is enabled.</p> <p> Important: This setting must be identical to the iiop-port setting on the system. The parameter entered here is used as a default value by the application. Once the server installation is complete, ASR 5000s to be managed can be configured each with their own IMG Port value through the client interface.</p> <hr/> <p>Enter this value as an integer, ranging from 0 to 65535.</p>	14132
Corba Communication Port (SSL)	<p>Enter the port over which CORBA communication occurs with the system in the field provided. The corba communication port is configured same as the SSL port on the boxer.</p> <hr/> <p> Important: This field will not be displayed if the Enforce SSL parameter in the SSL Configuration panel is disabled.</p> <p> Important: This setting must be identical to the siop-port setting on the system. The parameter entered here is used as a default value by the application. Once the server installation is complete, ASR 5000s to be managed can be configured each with their own ASR 5000 Port value through the client interface.</p> <hr/> <p>Enter this value as an integer, ranging from 0 to 65535.</p>	14131

Parameter	Description	Default Value
Application Server ID	<p>Enter the name by which the WEM CORBA application server is identified to the chassis.</p> <hr/> <p> Important: This name must match the parameter configuration on the chassis. The parameter entered here is used as a default value by the application. Once the server installation is complete, ASR 5000s to be managed can be configured each with their own ASID value through the client interface.</p> <hr/>	STARENT
Application Server Password	<p>Enter the password used by the WEM CORBA application server when communicating with the chassis.</p> <hr/> <p> Important: This password must match the parameter configuration on the chassis. The parameter entered here is used as a default value by the application. Once the server installation is complete, ASR 5000s to be managed can be configured each with their own password value through the client interface.</p> <hr/>	Null
Network Management System (NMS):		
FTP User Name	<p>Enter a name for the WEM user with FTP privileges on the chassis in the field provided.</p> <p>For FTP to work properly between the WEM server and any chassis, an administrator user with FTP privileges must be configured through the system's CLI. It is highly recommended that this CLI administrator be configured using the "nocli" option, allowing only FTP privileges into the system.</p> <p>If the WEM server is to manage multiple chassis, then this same CLI user must be configured on each of the chassis.</p>	staradmin
FTP Password	Enter a password for the FTP user in the field provided. The password is case sensitive.	Null
User Limit	<p>Enter the maximum number of WEM users that can simultaneously access the server.</p> <p>The number can be configured to any integer value from 1 through 100.</p>	10
Security Admin Limit	<p>Enter the maximum number of WEM users with <i>Security Administrator</i> privileges that can simultaneously access the server.</p> <p>The number can be configured to any integer value from 1 to the number specified as the <i>User Limit</i>.</p>	5
User Session Limit	<p>Enter the maximum number of sessions allowed for a single WEM user.</p> <p>The number can be configured to any integer value from 0 to the number specified as the <i>User Limit</i>. A value of 0 disables the implementation of user limits on a per-context basis.</p>	5

Parameter	Description	Default Value
Context User Limit	Enter the maximum number of Web Element Management user sessions allowed on a per-system context basis. The number can be configured to any integer value from 0 to the number specified as the <i>User Limit</i> . A value of 0 disables the implementation of user limits on a per-context basis.	5
FTP Session Limit	Enter the maximum number of simultaneous FTP sessions allowed to the chassis through the WEM. The number can be configured to any integer value from 1 through 20.	5
Storage Server Directory	Enter the name of the directory in which files shared with the storage server are to be stored.	./flash
Syslog Config File	Enter the directory path for the syslog configuration file. This is needed for the WEM's syslog event viewing functionality.  Important: If the file is not found in the specified directory, an error message is displayed.	/etc/syslog.conf
EMS Server Configuration (contd.)		
Fault Management (FM):		
SNMP Trap Port	Enter the TCP port over which SNMP traps are received from the system in the field provided. Enter this value as an integer, ranging from 0 to 65535.	162
SMTP Server Name	Enter a host name or IP address for a Simple Mail Transfer Protocol (SMTP) server, if needed, in the field provided. This is the mail server to which notifications are sent.  Important: This parameter must be configured in order to send e-mails to new users when a trap is generated. E-mail can be configured for a trap in Alarm Configuration screen. 'SMTP Server name' is used as the E-mail Server for those mails.	Null
Sender Email-ID	Configure the e-mail address to which the system is to send notifications in the field provided. The e-mail address should be in the form <i>username@domain</i> .  Important: This parameter must be configured in order to send e-mails to new users when a trap is generated. E-mail can be configured for a trap in Alarm Configuration screen. 'Sender E-mail ID' is used as the 'From' (Originator) for those mails.	Null
Bulk Statistics:		

Parameter	Description	Default Value
Bulkstat FTP User Name	Enter the name of the user with FTP privileges on the external network management server. This parameter is used in conjunction with the <i>Bulkstat FTP Perform Operation</i> parameter.	anonymous
Bulkstat FTP Password	Enter the password of the user with FTP privileges on the external network management server. This parameter is used in conjunction with the <i>Bulkstat FTP User Name</i> parameter.	Null
Host IP Address	Enter the IP address of the external network management server to which XML-parsed bulkstatistic files are to be sent. This parameter is used in conjunction with the <i>Bulkstat FTP Perform Operation</i> parameter.	127.0.0.1
Host Base Directory	Enter the directory on the external network management server to which the bulkstatistic files are to be written. The default directory is <i>/tmp</i> . This parameter is used in conjunction with the <i>Bulkstat FTP Perform Operation</i> parameter.	/tmp
Archive Bulkstat Files	Select this option if the WEM is to archive bulkstatistic information from the chassis. Archived data is stored to the <i><ems_dir>/server/bulkstat_archive</i> directory by default.	Disabled
Generate XML Files	Select this option if the server is to create XML files containing processed bulkstatistic information for forwarding to a remote server. XML-parsed data is stored in the <i><ems_dir>/server/xmldata</i> directory by default. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">  Important: Since the Bulkstat Server process is responsible for XML file generation, if this option is not enabled, the Bulkstat Server process is not started. </div>	Disabled
Bulkstat FTP Perform Operation	Select this option if the server is to transfer XML-parsed bulkstatistic data files to an external network management server. Bulkstatistic information retrieved from the chassis via FTP is stored in the <i><ems_dir>/server/data</i> directory by default prior to processing.	Disabled
User Administration		
EMS Administrator E-Mail Address	Enter an e-mail ID to be used as the originator for e-mails generated during new user account creation or password resets.	Null
Hardware Inventory		
Hardware Notifier Email-ID	Enter an e-mail ID to be used as the originator for e-mails generated as a result of a hardware change.	Null
EMS Process Monitor Configuration		
Poll Interval (sec)	Enter the frequency at which process table queries are performed. The interval is measured in seconds.	30

Parameter	Description	Default Value
Number Of Retries	Configure the number of times the system attempts to communicate with a process prior to taking action. If the process has not responded to the final attempt within the configured timeout interval, the system considers it unreachable and takes action.	10
Timeout Interval (sec)	Configure the amount of time the system should wait prior to re-attempting to communicate with an un-responsive process in the field provided. The interval is measured in seconds. Once the time interval has been reached, the system re-attempts communication for the configured number of retries prior to considering the process unreachable and taking action.	330
SMTP Server Name	Enter a host name or IP address for a Simple Mail Transfer Protocol (SMTP) server, if needed, in the field provided. This is the mail server to which notifications are sent when processes fail/start.	Null
To Email-ID	Configure the e-mail address of the individual to be notified in the field provided. E-mail notifications are sent to this individual when the system cannot communicate with a process. The e-mail address should be in the form <i>username@domain</i> .	Takes setting from previous SMTP parameter.
Monitor Process	EMS Process Monitor functionality is capable of monitoring WEM server processes at pre-configured intervals. In the event of a process becoming unresponsive, the system sends notifications and can re-spawn the process. Refer to the WEM Process Monitor chapter for additional information. The following processes can be monitored: <ul style="list-style-type: none"> • EMS Server • Bulkstat Server • Bulkstat Parser • Script Server • NorthBound Server 	All processes enabled
Postgres Configuration		
User Name	Enter a username for the Postgres database administrator in the field provided. <div style="border: 1px solid black; padding: 5px; text-align: center;">  Caution: To ensure proper operation and data integrity, the PostgreSQL database instances installed with the WEM should only be used by the application. </div>	postgres
Password	Enter a password for the user in the field provided. The password is case sensitive.	Null
Use Local Installation	Select this option to install Postgres on the local server If enabled, the system's local IP address of 127.0.0.1 is used. <div style="border: 1px solid black; padding: 5px; text-align: center;">  Important: This option is not present in the console-based installation script. </div>	Enabled

Parameter	Description	Default Value
Use Remote Installation	<p>Select this option to install Postgres on a remote system. If enabled, configure the IP address of the server in the field provided.</p> <hr/>  Important: This option is not present in the console-based installation script. <hr/>	Disabled
Element Management System Installation Confirmation		
	This dialog or script section is informational and contains no configurable parameters.	N/A
Component Starting Panel (Select the components to be started)		
Select the components to be started	<p>Select the WEM software components to start as part of the installation. The following components are available:</p> <ul style="list-style-type: none"> • Apache Server • EMS Processes • Restore old Postgres 7.2.4 database into new postgres 8.2.0 <p>Upon selecting the component “Restore old postgres 7.2.4 database into new postgres 8.2.0”, the postgres database migration is started from older version to the new version as WEM releases 7.0 and later support only Postgres version 8.2.0. For more details on the database migration process, refer to the log file <i>.dbmigration.log</i> in the <i>/<ems_dir>/server/log</i> directory.</p> <hr/>  Important: Successful installation of the WEM application requires that the Apache Server and EMS processes be started. The default setting is to enable them. Though prompts are provided to disable them, it is highly recommended that you do not modify the default behavior. <hr/>	All components selected
Startup Script Panel		
Start EMS at machine startup	Select this option to enable the WEM to start automatically each time the server on which it is installed is rebooted.	Enabled

Once all components have started, a dialog box appears confirming that the installation was successful.

Step 5 Click the Finish button to exit the GUI-based installation wizard.

Step 6 Verify that all WEM processes were successfully started by looking at the on-screen messages in the console window. The following provides a sample of the messages:

```
Starting WEM Server...
WEM Server started.
PID: 1370
```

```

Logfile generated as:
./log/SERVER_LOG_20051220_142931/SERVER_LOG

Starting Script Server...

Script Server started.

PID: 1389

Logfile generated as:
./log/SCRIPT_LOG_20051220_142937/SCRIPT_LOG

```

The following table lists the processes that are started at installation.

Process	Log File
EMS Server	.server.log
Script Server	.scriptserver.log
BulkStat Server	.bulkstatserver.log
BulkStat Parser Server	.bulkstatparser.log
Monitor Server (if enabled)	.watchdog.log
NorthBound Server	.northboundserver.log
Notification Service	.notifyservicescript.log



Important: The NorthBound Server and Notification Service processes are customer-specific and are not operational without the appropriate license. Please contact your local sales representative for additional information.

All log files are stored in the `/<ems_dir>/server/log` directory by default. Refer to log files for additional information in the event that one or more of the processes did not start properly.

Step 7 Copy the un-installation script to the `_uninst` directory created during the installation process (`/<ems_dir>/_uninst` by default) by entering the following command:

```
cp uninst /<ems_dir>/_uninst/
```

Step 8 Copy the files pertaining to the migrate script to the scripts directory created during the installation process (`/<ems_dir>/server/scripts` by default) by entering the following commands:

```
cp migrate.tar.gz /<ems_dir>/server/scripts/migrate.tar.gz
```

```
cp README_MIGRATE /<ems_dir>/server/scripts/README_MIGRATE
```

Step 9 Proceed to the [WEM Server Files and Operation](#) chapter of this guide for additional information on WEM Server files and functionality.



Important: Please contact Cisco support for default Username and Password.

Installing the WEM Software using the Console-Based Installation Method

Follow the instructions below to install the WEM using the console-based installation script.



Important: If you are installing the WEM to upgrade an existing version that is currently installed and running, proceed to the [Upgrading the WEM Software](#) chapter of this guide.

Step 1 Go to the directory in which the WEM installation files are located.

Step 2 Execute the setup file by entering the following command:

```
./inst -console
```

A message appears welcoming you to the WEM installation.

Step 3 Enter “1” to proceed.

Step 4 Follow the on-screen prompts to proceed through the installation script and configure the various parameters as required. Refer to the *WEM Installation Parameter Descriptions* table for descriptions of the configurable parameters within each of the sections of the script.

Once you have completed the installation configuration and all processes have started, you receive a message indicating that the WEM was successfully installed.


Step 5 Enter “3” to finish the installation.

Step 6 Verify that all WEM processes were successfully started by looking at the on-screen messages in the console window. The following provides a sample of the messages:

```
Starting WEM Server...
WEM Server started.
PID: 1370
Logfile generated as:
./log/SERVER_LOG_20051220_142931/SERVER_LOG
Starting Script Server...
Script Server started.
PID: 1389
Logfile generated as:
./log/SCRIPT_LOG_20051220_142937/SCRIPT_LOG
```

The following table lists the processes that are started at installation:

Process	Log File
EMS Server	.server.log
Script Server	.scriptserver.log
BulkStat Server	.bulkstatserver.log
BulkStat Parser Server	.bulkstatparser.log
Monitor Server (if enabled)	.watchdog.log
NorthBound Server	.northboundserver.log
Notification Service	.notifyservicescript.log

 **Important:** The NorthBound Server and Notification Service processes are customer-specific and are not operational without the appropriate license. Please contact your local sales representative for additional information.

All log files are stored in the `/<ems_dir>/server/log` directory by default. Refer to log files for additional information in the event that one or more of the processes did not start properly.

Step 7 Copy the un-installation script to the `_uninst` directory created during the installation process (`/<ems_dir>/_uninst` by default) by entering the following command:


```
cp uninst /<ems_dir>/_uninst/
```

Step 8 Copy the files pertaining to the migrate script to the `scripts` directory created during the installation process (`/<ems_dir>/server/scripts` by default) by entering the following command:

```
cp migrate.tar.gz /<ems_dir>/server/scripts/migrate.tar.gz
```

```
cp README_MIGRATE /<ems_dir>/server/scripts/README_MIGRATE
```

Step 9 Proceed to the [WEM Server Files and Operation](#) chapter of this guide for additional information on WEM Server files and functionality.

 **Important:** Please contact Cisco support for default Username and Password.

Configuring IPMP on WEM Server

With IPMP, two or more network interface cards (bge0, bge1 etc.) are dedicated for each network to which the host connects. Each interface is assigned a static “test” IP address, which is used to access the operational state of the interface. Each virtual IP address is assigned to an interface, though there may be more interfaces than virtual IP addresses, some of the interfaces being purely for standby purposes. When the failure of an interface is detected its virtual IP addresses are swapped to an operational interface in the group.

The IPMP load spreading feature increases the machine's bandwidth by spreading the outbound load between all the cards in the same IPMP group.



Important: IPMP is a feature supported on Sun® Solaris® provided by Sun Microsystems. The configuration is included in *Section VI* of the *System Administration Guide: IP Services* from Sun Microsystems. For more information, refer to the Sun documentation

This section describes following procedures to configured IP Multipathing on WEM server:

- [Configuring Probe-based IP Multipathing](#)
- [Configuring Link-based IP Multipathing](#)

Before proceeding for IPMP configuration here are some terms related to IPMP configuration:

- **Multipath Interface Group:** This the name given to the group of network devices in a multipath configuration.
- **Test Addresses:** These are IP addresses assigned to each board/interface of the multipath group, they do not move but should not be used for connections in or out of the host.
- **Multipath/float Address** - This is the IP address allocated to a Multipath Interface Group that is shared between all devices in the group (either by load sharing or active standby).

Configuring Probe-based IP Multipathing

Configuration procedure given here assumes that:

- WEM Server Host name is *hostname*
- *NIC_1* and *NIC_2* are the network interface devices; i.e. bge0, bge1 etc.
- Using network device *NIC_2* as active and *NIC_1* as the Standby
- Multipath Interface Group name is *multipath_grp*
- Multipath IP address is *<multipath_IP_address>*
- Test IP address for *<NIC_1>* interface in *<test_IP_address_NIC_1>*
- Test IP address for *<NIC_2>* interface in *<test_IP_address_NIC_2>*

Step 1 Ensure that the MAC addresses on the host are unique by setting the local-mac-address parameter to true by running following command as *root* user:

```
eeprom local-mac-address?=true
```

Step 2 Create an `/etc/hostname.<NIC_1>` for the Standby network device with the following entry:

```
<hostname>-<NIC_1> netmask <netmask> broadcast+group <multipath_grp>
depreciated -failover standby up
```

`<hostname>` is name of the Host and `<NIC_1>` is the network device to be set as *Standby*.

`<multipath_grp>` is Multipath Interface Group name given to the group of network devices in a multipath configuration.

`<netmask>` is the sub-netmask used by network.

Step 3 Create an `/etc/hostname.<NIC_2>` for the active network device with the following entry:

```
<hostname>-<NIC_2> netmask 255.255.255.0 broadcast+group <multipath_grp>
depreciated -failover up addif <hostname>-active netmask 255.255.255.0
broadcast+failover up
```

`<hostname>` is name of the Host and `<NIC_2>` is the network device to be set as *Active*.

`<multipath_grp>` is Multipath Interface Group name given to the group of network devices in a multipath configuration.

Step 4 Edit the `/etc/hosts` file using “vi editor” and add the following three entries:

```
<multipath_IP_address> <hostname>-active
<test_IP_address_NIC_1> <hostname>-NIC_1
<test_IP_address_NIC_2> <hostname>-NIC_2
```

`multipath_IP_address` is the IP address allocated to a Multipath Interface Group that is shared between all devices in the group (either by load sharing or *Active-Standby*).

`test_IP_address_NIC_1` is the IP addresses assigned to `<NIC_1>` interface of the multipath group, they do not move but should not be used for connections in or out of the host.

`test_IP_address_NIC_2` is the IP addresses assigned to `<NIC_2>` interface of the multipath group, they do not move but should not be used for connections in or out of the host.

Step 5 Restart the host by supplying following command:

```
shutdown -i 6 -g 0 -y
```

Configuring Link-based IP Multipathing

Configuration procedure provided here assumes that:

- WEM Server Host name is `<hostname>`
- `<NIC_1>` and `<NIC_2>` are the network interface devices; i.e. `bge0`, `bge1` etc.
- Using network device `<NIC_1>` as *active* and `<NIC_2>` as the *standby*
- Multipath Interface Group name is `<multipath_grp>`
- Multipath IP address is `<multipath_IP_address>`

- Test IP address for `<NIC_1>` interface in `<test_IP_address_NIC_1>`
- Test IP address for `<NIC_2>` interface in `<test_IP_address_NIC_2>`
- `<my_address>` is associated with Multipath IP address `<multipath_IP_address>` in the `/etc/hosts` file

Step 1 Ensure that the MAC addresses on the host are unique by setting the `local-mac-address` parameter to true by running following command as root user:

```
eeeprom local-mac-address?=true
```

Step 2 Create an `/etc/hostname.<NIC_1>` for the Active network device with the following entry:

```
<my_address> netmask + broadcast + group <multipath_grp> up
```

`<my_address>` is associated with Multipath IP address `<multipath_IP_address>` in the `/etc/host` file.

`<multipath_grp>` is Multipath Interface Group name given to the group of network devices in a multipath configuration.

Step 3 Create an `/etc/hostname.<NIC_2>` for the Standby network device with the following entry:

```
group <multipath_grp> up
```

Step 4 Restart the host by supplying following command:


```
shutdown -i 6 -g 0 -y
```


Chapter 4

WEM Server Files and Operation

Once the WEM software has been installed according to the information and instructions in the previous chapter, the information in this chapter can be used as a reference for performing further configuration of the Web Element Management Server to customize it to your needs.

This chapter provides information on the WEM Server directory structure and important files, description for the various configuration files supported by the application, and instructions for verifying and stopping/starting component processes.

 **Important:** If no further configuration is needed, proceed to *Preparing and Using the Client Workstation* chapter of this guide for information and instructions for preparing and using WEM Clients.

This chapter includes the following topics:


- [Server Directory Structure and Important Files](#)
- [Server Configuration Files](#)
- [Server Log Files](#)
- [Server Scripts](#)
- [Controlling Server Component Processes](#)



Server Directory Structure and Important Files




The following table provides information on the application's directory structure after installation and identifies important files.


Table 3. WEM Server Directory Structure and Important Files

Directory/Filename	Description
/_jvm	Contains files pertaining to Java and Java Runtime Environment (JRE).
/_uninst	Contains files for uninstalling the WEM application.
uninst	Executable file for uninstalling the WEM application.
/apache	Contains files pertaining to the Apache Web Server used to provide access to the WEM.
/bin	Contains files required for starting/stopping the Apache process and HTTP daemon.
apachectl	Executable file for starting/stopping the Apache Web Server. Refer to the Controlling Server Component Processes section later in this chapter for more information.
/client	Contains files pertaining to the WEM Client.
.java.policy	Java Policy file required by client to access the WEM Server. Refer to <i>Preparing and Using the Client Workstation</i> chapter of this guide for more information.
/xxxx	A directory containing client files for the current build, xxxx is the last four digits of the current build number.
/audio	.WAV audio files used for WEM's audio alarming functions
/mapimages	.GIF map image files that can be configured for the client(s)
/webhelp	HTML-based online help files for the application; they are accessible through the client Graphical User Interface (GUI).
img.html	Webpage used for accessing WEM. Refer to <i>Preparing and Using the Client Workstation</i> chapter of this guide for more information.
imgdebug.html	The same as the img.html file except that it enables application level logs in the Java Console.
console.log	Log file containing console messages generated during installation.
inst.log	Log file created to track installation progress.
/perlx.x.x	Contains files pertaining to the specified version of the PERL scripting language, x.x.x is the version of PERL.
/postgres.x.x	Contains files pertaining to the PostgreSQL database used by the WEM, x.x.x is the version of Postgres.

Directory/Filename	Description
/bin	Contains files required for starting/stopping PostgreSQL and the Postmaster daemon.
pg_ctl	Executable for starting/stopping the PostgreSQL server.
pg_start	Executable for starting Postmaster daemon. Refer to the Controlling Server Component Processes section later in this chapter for more information.
pg_stop	Executable for stopping Postmaster daemon. Refer to the Controlling Server Component Processes section later in this chapter for more information.
psql	Enters the PostgreSQL interactive terminal.
vacuumdb	Removes old and/or unused records from the various WEM databases. Refer to <i>WEM Database Maintenance</i> chapter of this guide for more information.
logfile	Log file containing information pertaining to PostgreSQL operation.
/server	Contains files pertaining to the WEM Server.
/alarmscripts	A directory for storing user-defined scripts.
/bin	Contains WEM server and component executable files.
/bulkstat_archive	Contains Bulk statistics archive files (if collected).
/crondir	A directory for storing cron-specific files.
/dbscripts	Contains scripts for use with the PostgreSQL database.
migrate.tar.gz	File containing the migrate script used for migration of WEM from one version to another version used when performing a software upgrade or downgrade.
/data	Contains un-parsed bulk statistic data received from managed systems.
/etc	Contains WEM configuration files. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">  Important: Many of these files contain user-configurable parameters for tailoring the operation of the WEM. Information on the various parameters in these files is provided within the files. Refer to the Server Configuration Files section of this chapter for more information. </div>
alarmid.cfg	SNMP alarm identification configuration file
audio.cfg	Audio alarms configuration file
blacklist.cfg	Configuration file containing information that are used to enable blacklisting feature on WEM.
bs.cfg	Bulk statistic configuration file
bsparser.cfg	Bulk statistic parser configuration file

Directory/Filename	Description
bsparserlogger.xml	Bulk statistic parser logger file. Refer to <i>Enhanced WEM Logging</i> chapter of this guide for more information.
bssserver.cfg	Bulk statistic server module configuration file
bssserverlogger.xml	Bulk statistic server logger file Refer to <i>Enhanced WEM Logging</i> chapter of this guide for more information.
bstca.cfg	Bulk statistic threshold configuration file
cf.cfg	Configuration file for ad-hoc report generation
configupdate.cfg	System software update functionality configuration file
db.cfg	Postgres database configuration file <hr/>  Caution: Improper configuration of this file can adversely affect WEM operation. <hr/>
emscert.txt	WEM RSA key and certificate <hr/>  Caution: Do not alter this file. <hr/>
emslc.cfg	WEM license configuration file
emslogger.xml	WEM Server logger file Refer to <i>Enhanced WEM Logging</i> chapter of this guide for more information.
fm.cfg	Fault management configuration file containing default severity levels for product SNMP traps.
hwinv.cfg	Contains the e-mail ID used when sending notifications of hardware changes.
ism.cfg	WEM/managed system communication configuration file
mcrdbs.cfg	MCRDBS configuration file
MeasurementStat.dtd	Document Type Definition (DTD) configuration file for validating bulk statistic data.
nb.cfg	NorthBound Notification Service configuration file

Directory/Filename	Description
nbserver.cfg	File containing configuration parameters for NorthBound Server and Notification Service processes and other configuration parameters for NorthBound interface.  Important: The NorthBound Server and Notification Service processes are customer-specific and are not operational without the appropriate license. Please contact your local sales representative for additional information.
nbserverlogger.xml	NorthBound Server logger file
nms.cfg	WEM parameter configuration file
processmonitor.cfg	Process Monitor server configuration file
ps.cfg	Polling support configuration file
psmon.cfg	Process Monitor rule configuration file
pw_dict.*	All pw_dict files pertain to the password-complexity checking algorithm in support of ANSI security.
res.cfg	Screen-specific resource-bundle path configuration file  Caution: Do not alter this file.
scriptlogger.xml	Script Server logger file Refer to <i>Enhanced WEM Logging</i> chapter of this guide for more information.
ssl-key-cert.txt	Secure Sockets Layer (SSL) RSA key and certificate configuration file  Caution: Do not alter this file.
STARENT-EMS-MIB.txt	WEM Server SNMP MIB file. Refer to the SNMP MIB Reference for more information on the objects and alarms defined in the MIB.
thr.cfg	Thread pool configuration file
ua.cfg	User administration configuration file
vacuum.cfg	Database vacuuming configuration file
wblist.cfg	Configuration file storing the white black list database file paths
/flash	Backup directory for SMC Compact Flash memory modules
./flash	Storage Server Directory where the periodic backup of database is stored.

Directory/Filename	Description
getSupportDetails.pl	Script used for collecting server logs and other information that is useful for troubleshooting. Refer to Capturing WEM Server Logs using Script section of Troubleshooting the WEM appendix of this guide for more information on using this script.
/installdata	Contains copies of the configuration files used at the time of installation.
/log	Contains log files for the various components of the WEM.
psmon	Process Monitor executable file Refer to <i>WEM Process Monitor</i> chapter of this guide for more information.
/scripts	Contains script files that can be used in conjunction with the WEM.
serv	Executable file for starting/stopping the WEM Server. Refer to the Controlling Server Component Processes section later in this chapter for more information.
/xmldata	Contains XML-parsed bulk statistic records if the “Generate XML Files” option is enabled.
ems_migrate	<p>Script used for backup and restore of EMS directories.</p> <hr/> <p> Important: This script should be used with the same EMS releases. It will be required in case of EMS setup migration from one machine to another machine, OS change (Solaris 8 to Solaris 10), etc. There is a config file with this script, in which the list of directories for backup and restore can be specified For example: <code>dir_list=postgres/data server/etc server/bsschema</code></p> <hr/>

Server Configuration Files

As identified in the *WEM Server Directory and Important Files* table, the WEM provides a number of configuration files which can be modified to fine-tune the operation of the application. These files are located in the `/<ems_dir>/server/etc` directory by default.

This section provides descriptions for each of the configuration files. Details of the parameters in each file is located within the files. The default values for these parameters are suitable for most installations. However, the values can be modified using a text editor (such as *Vi Editor*) if required.



Caution: For most of these files, the WEM application process must be stopped and restarted in order for modifications to take effect. To ensure proper operation, be sure to read and understand all the information provided in the files prior to making changes.



Important: Refer to the *WEM Configuration File Parameters* appendix for detailed information on the server configuration file parameters.

The alarmid.cfg File

This file provides parameters pertaining to the configuration of SNMP alarms received from managed devices.

The audio.cfg File

This file provides alarm severity associations to specific audio files. The audio files are in WAV format and are played by the WEM when an alarm of that severity is received.


Additionally, this file can be used to associate an audio file to a specific alarm for further customization.

The blacklist.cfg File

This file contains a flag that is set to enable/disable the blacklisting feature on WEM. The file provides parameters for specifying information such as blacklist backup limit, time interval to poll the blacklist directory, etc.


The bs.cfg File

This file provides bulk statistic configuration information pertaining to schemas, formatting, and parameters for specifying time tolerances for searching bulk statistic records.

 **Caution:** To ensure proper operation of the WEM, bulk statistic schema and formatting configuration in this file should not be altered.

The bsparser.cfg File


This file provides parameters for specifying such information as the directories in which bulk statistics records received from the chassis are stored and archived after they are processed, in addition to time intervals for polling and record transfer.

 **Important:** Several parameters contained in this file are configurable through the installation process.

The bsserver.cfg File

This file provides parameters pertaining to the XML-parsing of bulk statistic records received from the chassis. These parameters provide the ability to enable/disable XML parsing and specify such things as the directory in which parsed records are to be stored, time intervals for checking new records, and whether a single XML file should be generated for all subsystems or one XML file per subsystem in accordance with 3GPP TS 32.401 V4.1.0 and 3GPP TS 32.435 V6.2.0. Secure protocols should be used between WEM and the external system while exporting the performance data in the XML format.

The bulk statistics data from a managed system is received by the WEM Server in Comma Separated Value (CSV) format. The data is stored in the `/server/data/<system-name>` directory by default. The XML files should get generated under `<server-dir>/xmldata` as long as the files are getting parsed and the data is getting logged in database. This generation of XML files is done by a separate process namely, `bulkstatserver`.

 **Important:** Several parameters contained in this file are configurable through the installation process.

The bstca.cfg File

This file contains parameters pertaining to the threshold configuration for bulk statistic counters. This file includes the threshold values, i.e. clear threshold and set threshold to notify and clear SNMP traps accordingly. These threshold values are specified based on the threshold limit.

The cdp.cfg File

This file contains CDP specific parameters that are configured for generation of ad-hoc reports. The parameters are also configured to export Optimized Customer Master Database (OPTCMDB) files to CDP.

The configupdate.cfg File

This file contains parameters pertaining to performing chassis software configuration updates using the WEM. The directory in which configuration files are stored, and the directory in which configuration update log files have to be stored can be configured.

The db.cfg File

This file contains parameters pertaining to the WEM's use of the Postgres database. It identifies the various databases and their locations.



Caution: Improper configuration of this file can adversely affect WEM operation.

The emslic.cfg File

This file contains license information for the WEM Server installation.

The fm.cfg File

This file contains parameters pertaining to the handling of received alarms. It provides parameters for configuring things such as color indicators for the various severities, E-mail server information for alert notifications, and SNMP operation.



Important: Several parameters contained in this file are configurable through the installation process.

The hwinv.cfg File

This file provides the e-mail ID used when sending hardware change notifications.



Important: The parameter in this file is configurable through the installation process.

The ism.cfg File

This file contains parameters pertaining to communication between the WEM and managed chassis. These parameters include the security information used to access the chassis as well as the ports over which communication takes place.

This file also contains a parameter that provides the ability to enable/disable the SSL encryption for client-to-server and server-to-boxer communication. This parameter is configured so that the SSL encryption feature is enabled by default.

The mcrdbs.cfg File


This file contains parameters that are configured to support conversion of Vendor Format Master Database (VFMDB) to Starent Networks Format Master Database (SFMDB). This file also contains information on MCRDBS to handle the database files.

The nb.cfg File

This file contains parameters for NorthBound notifications from the WEM. The information in this file is used by the application for forwarding fault management information to other management devices on the NorthBound interface. This information includes things such as the device IP address and port number on which to forward notifications.


The nbserver.cfg File

This file contains parameters for the configuration of NorthBound Server and Notification Service processes, and NorthBound interface.

 **Important:** The NorthBound Server and Notification Service processes are customer-specific and are not operational without the appropriate license. Please contact your local sales representative for additional information.

The nms.cfg File

This file contains parameters which control WEM access to the PostgreSQL database, client access to the server, and other properties used by the application for proper operation.

 **Important:** Several parameters contained in this file are configurable through the installation process.

The processmonitor.cfg File

This file contains parameters used by the Process Monitor (refer to the *WEM Process Monitor* chapter for more information) function. These include parameters such as the directories from which WEM-related processes are started, polling intervals, and maximum percentage thresholds.

The ps.cfg File

This file contains parameters which control WEM polling intervals for things such as managed chassis and database queries.

The psmon.cfg File

This file contains parameters for the operation of the PSMon (Process Monitor) function supported by the WEM. Additional details on this function and the parameters in this file are located in the *WEM Process Monitor* chapter of this guide.

The res.cfg File

This file contains parameters for associating resource-bundles to specific WEM dialogs.



Caution: To ensure proper operation of the WEM, do not edit the parameters in these files.

The thr.cfg File

This file contains parameters pertaining to the WEM thread pool.



Caution: To ensure proper operation of the WEM, do not edit the parameters in these files.

The ua.cfg File

This file contains parameters pertaining to the WEM's support for the ANSI T1.276 security specification. These include parameters granting and restricting access, login failures, password aging, and password complexity.

The vacuum.cfg File

This file contains parameters pertaining to PostgreSQL database vacuuming. Additional details on this function and the parameters in this file are located in *WEM Database Maintenance* chapter of this guide.

The wblast.cfg File

This file provides information on the white black list database file paths that are mainly used for content filtering.

Server Log Files

By default, log files generated by the WEM application are stored in the `<ems_dir>/server/log` directory. The location is specified in the `xxxlogger.xml` files stored in the `<ems_dir>/server/etc` directory (refer to the *Enhanced WEM Logging* chapter for information on these files).

Within the `log` directory, subdirectories are created as needed to contain log files for each of the various components that comprise the WEM Server:

- EMS Server = `SERVER_LOG`
- Script Server = `SCRIPT_LOG`
- BulkStat Server = `BS_SERVER_LOG`
- BulkStat Parser = `BS_PARSER_LOG`

The above directory names are appended with a datestamp (YYYYMMDD) and timestamp (HHMMSS). For example, a subdirectory containing EMS Server logs might be named `SERVER_LOG_20051230_164433`.

Note that logs for the Process Monitor are written to the `watchdog.log` file in the log base directory.

The WEM provides enhanced logging functionality that allows for the customization of the log file output. More detailed information on configuring and using this functionality can be found in the *Enhanced WEM Logging* chapter of this guide.

Log File Severities

There are seven severity levels possible for log messages, as shown below:

- Disabled (value 8)
- Severe (value 7)
- Warning (value 6)
- Info (value 5)
- Config (value 4)
- Fine (value 3)
- Finer (value 2)
- Finest (value 1)

Each message being generated by the server, has one of the above severity levels.

Whatever debugging level is configured, the messages with that level and above will be logged in the log file. For example, if level 3 is specified then, all messages of severity *Severe*, *Warning*, *Info*, *Config*, and *Fine* appear in the log, however, those messages with a severity of *Finer* and *Finest* do not.

The logging level is configurable using the WEM Server executable, `serv` (located in the `<ems_dir>/server` directory by default). The default level is *Finest*.

Alternatively, the `xxxlogger.xml` files stored in the `<ems_dir>/server/etc` directory provide a mechanism for specifying the log level for the specific WEM server modules. These levels only take effect if the configured level is more granular than that configured at the server level.

Server Scripts

As identified in the *WEM Server Directory and Important Files* table, a number of user-executable scripts are provided with the WEM. These scripts are located in the `/<ems_dir>/server/scripts` directory by default.

The scripts provide extended, often CPU and memory intensive functionality which is not available through the WEM Client. Because the scripts provide a more efficient mechanism for these processing-intensive functions, WEM Server performance is optimized.

The following scripts are available upon installation:

- **backup.sh:** Used to perform the backup/restore of the WEM databases.
- **batchJob.sh:** Uses user-provided information to telnet into a managed device, execute a command, and write its output to a log file. Refer to the *README.batchJob.txt* file in the same directory for more information.
- **deleteFilesTables.sh:** Deletes unnecessary information from database tables and unused files. The *tableFile.cfg* file is used to specify the criteria for determining which information or files are “unnecessary”. Refer to the *README.deleteFilesTables.txt* file in the same directory for more information.
- **kill_ems_clnt.sh:** Provides a mechanism for terminating specific WEM client sessions. Refer to the *README.kill_ems_clnt.txt* file in the same directory for more information.
- **loadConfig.sh:** Used by the Script Server to load configuration files on the managed systems. This is not a user-executable script.
- **loadRootCron.sh:** Used by the Script Server to load the root user’s cron entry for scheduling system configurations as part of the update feature. This is not a user-executable script.
- **set_superuser_password.sh:** This script is used to reset the “superuser” password to the default.
- **showCommand.sh:** Used by the Script Server to access and execute commands on managed devices. This is not a user-executable script.
- **showsupportdetails.sh:** Writes the show support details command output from the specified ASR 5000 to a text file for later processing. Refer to the *README.ShowSupportDetails.txt* file in the same directory for more information.
- **sortIPpools.sh:** Used to fetch the information of IP addresses for a given group in a sorted mail and to sort it out. Refer to the *README_sortIPpools.txt* file in the same directory for more information.

The above scripts can be executed by entering the following command as the *root* user:

```
./script_name
```

Where *script_name* is the name of the script as identified above.

Controlling Server Component Processes

This section provides information on verifying and manually stopping and starting WEM component processes.

Manually Verifying that WEM Components are Running

To verify that the various applications are running, follow the procedures in this section.

Verifying that the WEM is Running

Step 1 Log into the server as the user *root*.

Step 2 Go to the *server* directory within the WEM installation directory by entering the following command:

```
cd /<ems_dir>/server
```

Step 3 Verify that the application is running by entering the following command:

```
./serv status
```

The output of this command is a table listing the process, its ID (PID) and its status as shown in the following example:

PID	Process	Status
2093	Monitor Server	Running
1972	EMS Server	Running
2004	Script Server	Running
1929	BulkStat Server	Running
2022	BulkStat Parser	Running
2076	NorthBound Server	Running
2057	Notification Service	Running

 **Important:** The NorthBound Server and Notification Service processes are customer-specific and are not operational without the appropriate license. Please contact your local sales representative for additional information.

Verifying that the Apache Web Server is Running

Step 1 Log into the WEM server as the user *root*.

Step 2 Verify that the application is running by entering the following command:

```
ps -aef | grep httpd
```

Verifying that the Posters Database is Running

Step 1 Log into the WEM server as the user *root*.


Step 2 Verify that the application is running by entering the following command:

```
ps -aef | grep postmaster
```

Manually Stopping WEM Component Processes

At times, it may be necessary to manually stop WEM processes. For example, if the server on which the application is installed is to be serviced, the application processes could be stopped prior to beginning.

The WEM application and its ancillary components must be stopped in the exact order as listed below.

 **Important:** These instructions assume that the WEM was installed in the default directory, */users/ems*.

Step 1 Log into the WEM server as the user *root*.

Step 2 Go to the *server* directory within the WEM installation directory by entering the following command:

```
cd /<ems_dir>/server
```

Step 3 Stop the WEM Server processes by entering the following command:

```
./serv stop
```

Step 4 Verify that the WEM server and WEM Script server processes are no longer running by entering the following command:

```
ps -ef | grep server
```

Step 5 Go to the PostgreSQL installation directory by entering the following command:

```
cd /<ems_dir>/postgresx.x.x/bin/
```

Step 6 Stop the Postgres processes that are currently running on the server by entering the following command:

```
./pg_stop
```

Step 7 Verify that the Postgres processes are no longer running by entering the following command:

```
ps -ef | grep postgres
```

Step 8 Go to Apache Web Server installation directory by entering the following command:

```
cd /<ems_dir>/apache/bin/
```

Step 9 Stop the Apache web server process by entering the following command:

```
./apachectl stop
```

Step 10 Verify that the Apache web server processes are no longer running by entering the following command:

```
ps -ef | grep apache
```

Manually Starting the WEM Server Components

At times it may be necessary to manually start WEM processes. For example, if the server on which the application is installed is rebooted, the application processes must be restarted according to the instructions in this section.

The WEM application and its ancillary components must be started in the exact order as listed in this section.

Step 1: Start Apache Web Server

Step 1 Log into the WEM server as the user *root*.

Step 2 Move to the Apache directory by entering the following command:

```
cd /<ems_dir>/apache/bin
```

Step 3 Start the Apache web server by entering the following command:

```
./apachectl start
```

Step 4 Verify that the process is running using the instructions provided in the [Manually Verifying that WEM Components are Running](#) section of this chapter.

Step 2: Start Postgres Database

Step 1 Log into the WEM server as the user *root*.

Step 2 Move to the Postgres directory by entering the following command:

```
cd /<ems_dir>/postgresx.x.x/bin
```

Step 3 Start the Postgres database by entering the following command:

```
./pg_start
```

Step 4 Verify that the process is running using the instructions provided in the [Manually Verifying that WEM Components are Running](#) section of this chapter.

Step 3: Start WEM Server Application

Step 1 Log into the WEM server as the user *root*.

Step 2 Move to the WEM Server directory by entering the following command:

```
cd /<ems_dir>/server
```

Step 3 Start the WEM server application by entering the following command:

```
./serv start
```

Step 4 Verify that the process is running using the instructions provided in the [Manually Verifying that WEM Components are Running](#) section of this chapter.

Chapter 5

WEM Process Monitor

The Process Monitor is a script used for monitoring and maintaining WEM application software processes. It provides the flexibility of being run as a stand-alone program or a fully functional background daemon and is capable of logging to syslog and log file with customizable e-mail notification facilities. The ability to monitor and maintain these processes coupled with the ease and flexibility of this feature's configuration ensure maximum availability and optimum server performance.

The processes are monitored based on rules defined within a configuration file stored on the server. These rules identify criteria for determining the action to be taken if the conditions are met. (For example, if a process becomes unresponsive, the rule could cause the process to be re-spawned.)

Basic parameters pertaining to the Process Monitor were configured as part of the WEM installation or upgrade process. However, additional parameters are available for fine-tuning its configuration to meet the needs of your network.

This chapter provides information and procedures for modifying the Process Monitor's operation using the configuration file.

This chapter includes the following topics:

- [Process Monitor Configuration File](#)
- [Default Rules](#)
- [Verifying the Process Monitor Status](#)
- [Manually Stopping the Process Monitor](#)
- [Manually Starting the Process Monitor](#)
- [Running the Process Monitor as a Stand-alone Application](#)

Process Monitor Configuration File

Processes are monitored based on rules defined within a plain-text configuration file called `psmon.cfg` located in the `/users/ems/server/etc` directory (by default).

Rules are defined within the file using the following syntax:

```
<Process process_id>

    processing-directives directive_variables

</Process>
```

The following table provides the syntax descriptions.

Table 4. psmon.cfg Rule Syntax Descriptions

Syntax	Description
<code><Process process_id></code>	Identifies the process to be monitored. The process can be identified by name (i.e. <code>ssh</code>) or by URL (i.e. <code>/users/ems/server/bin/server</code>). Additionally, a wildcard (<code>*</code>) can be specified for monitoring all the processes.
<code>processing-directives directive_variables</code>	Identifies the criteria that must be met before action is taken as well as the action to be taken. The criteria are referred to as “Directives”, while the actions are referred to as “Process Scope Directives”. It is important to note that processing directives can be specified within a specific rule or outside of all rules. When outside, the directive is applied globally to all rules. The <code>psmon.cfg</code> Processing Directives table provides information on the supported processing directives.
<code></Process></code>	Indicates the end of a process rule.

Table 5. psmon.cfg Processing Directives

Directive	Description
-----------	-------------

Directive	Description
Facility	<p>Identifies the syslog facility used for logging. The following facilities are supported:</p> <ul style="list-style-type: none"> • LOG_KERN • LOG_USER • LOG_MAIL • LOG_DAEMON • LOG_AUTH • LOG_SYSLOG • LOG_LPR • LOG_NEW • SLOG_UUCP • LOG_CRON • LOG_LOCAL0 • LOG_LOCAL1 • LOG_LOCAL2 • LOG_LOCAL3 • LOG_LOCAL4 • LOG_LOCAL5 • LOG_LOCAL6 • LOG_LOCAL7 <p>Default: LOG_DAEMON</p>
LogLevel	<p>Identifies the log level priority used to mark notifications to syslog. The following levels are supported:</p> <ul style="list-style-type: none"> • LOG_EMERG • LOG_ALERT • LOG_CRIT • LOG_ERR • LOG_WARNING • LOG_NOTICE • LOG_INFO • LOG_DEBUG <p>This directive may also be used in a Process Scope Directive which has precedence over a global declaration.</p> <p>Default: LOG_NOTICE</p>
KillLogLevel (previously KillPIDLogLevel)	<p>Identical to the LogLevel directive, however it only applies to process kill actions. This directive has precedence over the LogLevel Directive and may also be used in a Process Scope Directive which has precedence over a global declaration.</p>

Directive	Description
SpawnLogLevel	Identical to the LogLevel directive, however it only applies to process spawn actions. This directive has precedence over the LogLevel Directive and may also be used in a Process Scope Directive which has precedence over a global declaration.
AdminEmail	Specifies the e-mail address to which notification e-mails should be sent. This directive corresponds to the To Email-ID parameter configured during the WEM installation. During the installation, it is stored as a global declaration, however it may also be used in a Process Scope Directive which has precedence over a global declaration. Default: root@localhost
NotifyEmailFrom	Specifies the e-mail address used in the “From” field of sent notification e-mails. Default: <username>@hostname
Frequency	The frequency (measured in seconds) at which the Process Monitor attempts communication with a process. This directive corresponds to the Poll Interval parameter configured during the WEM installation. During the installation, it is stored as a global declaration, however it may also be used in a Process Scope Directive which has precedence over a global declaration. Default: 30 seconds
LastSafePID	Specifies the highest process identification number which the Process Monitor cannot “kill”. When specified, the Process Monitor never attempts to kill a process ID which is numerically less than or equal to the value defined by this directive. This directive is treated as a global directive by default. Default: 800
ProtectSafePIDsQuietly	Enables or disables the suppression of all notifications for preserved process IDs when used in conjunction with the lastsafepid directive. “On” enables this functionality. “Off” disables it. This directive is treated as a global directive by default. Default: Off
SMTPHost	Specifies the IP address or hostname of the Simple Mail Transport Protocol (SMTP) server used for sending e-mail notifications. This directive corresponds to the SMTP Server Name parameter configured during the WEM installation. During the installation, it is stored as a global declaration, however it may also be used in a Process Scope Directive which has precedence over a global declaration. Default: localhost
SMTPTimeout	Specifies the timeout (measured in seconds) used during SMTP connections. Default: 20 seconds
SendmailCmd	Enables the configuration of the sendmail command used for sending e-mail notifications if a failure occurs with the SMTP connection to the host specified by the SMTPHost Directive. Default: /usr/sbin/sendmail -t
Dryrun	Forces this Process Monitor to function as if the --dryrun command line switch had been specified. This can be used for forcing a specific configuration file to only report information but never take any automated action. This directive is treated as a global directive by default. Default: False (disabled)

Directive	Description
NotifyDetail	<p>Specifies the verbosity of the notification e-mails. The following levels are supported:</p> <ul style="list-style-type: none"> • Simple • Verbose • Debug <p>Default: Verbose</p>
PROCESS SCOPE DIRECTIVES	
SpawnCmd	Identifies the full command line to be executed in order to re-spawn a dead process.
KillCmd	<p>Identifies the full command line to be executed in order to gracefully shutdown or kill a rogue process.</p> <p>If the command returns a boolean true exit status then, it is assumed that the command failed to execute successfully. If no KillCmd is specified or the command fails, the process is killed by sending a SIGKILL signal with the standard kill() function.</p>
PIDFile	Identifies the full path and filename of a file created by the process containing the identification number of its main parent process.
NUMRETRY	<p>The number of times the Process Monitor attempts to communicate with an un-responsive process before taking action.</p> <p>If the process has not responded to the final attempt within the configured timeout interval, the system considers it unreachable and takes action.</p> <p>This directive corresponds to the Number of Retries parameter configured during the WEM installation. During the installation, it is stored as a Process Scope Directive for each rule defined for WEM process.</p> <p>Default: 10</p>
TMINTVAL	<p>The amount of time (measured in seconds) the system should wait prior to re-attempting to communicate with an un-responsive process.</p> <p>Once the time interval has been reached, the system re-attempts communication for the configured number of retries.</p> <p>This directive corresponds to the Timeout Interval parameter configured during the WEM installation. During the installation, it is stored as a Process Scope Directive for each rule defined for WEM process.</p> <p>Default: 330</p>
TTL	<p>Specifies a maximum time-to-live (in seconds) for a process.</p> <p>The process is killed once it has been running longer than this value, and its process identification number is removed from the defined pidfile.</p>
PctCpu	<p>Specifies the maximum allowable percentage of CPU time a process may use.</p> <p>The process is killed once its CPU usage exceeds this threshold and its process identification number is removed from the defined pidfile.</p>
PctMem	<p>Specifies the maximum allowable percentage of total system memory a process may use.</p> <p>The process will be killed once its memory usage exceeds this threshold and its process identification number is removed from the defined pidfile.</p>
Instances	<p>Specifies the maximum number of instances of a process that are allowed to run simultaneously.</p> <p>The process will be killed once its memory usage exceeds this threshold and its process identification number is removed from the defined pidfile.</p>


Directive	Description
NoEmailOnKill	Enables or disables the suppression of e-mail notifications for killed processes. Default: False (disabled)
NoEmailOnSpawn:	Enables or disables the suppression of e-mail notifications for spawned processes. Default: False (disabled)
NoEmail	Enables or disables the suppression of all e-mail notifications. Default: False (disabled)
NeverKillPID	Specifies a list or process identification numbers (separated by spaces) that are never to be killed. Default: 1
NeverKillProcessName	Specifies a list or process names (separated by spaces) that are never to be killed. Default: kswapd kupdated mdrecoveryd


Default Rules

During the installation of WEM, the EMS Process Monitor Configuration dialog provides the opportunity to identify which WEM processes rules will be automatically defined.

The following process monitors were available for configuration:

- **EMS Server:** Enabled by default
- **Bulkstat Server:** Disabled by default
- **Bulkstat Parser:** Enabled by default
- **Script Server:** Disabled by default
- **NorthBound Server:** Disabled by default
- **Notification Service:** Monitoring disabled by default

 **Important:** The NorthBound (NB) Server and Notification Service processes are customer-specific and are not operational without the appropriate license. Please contact your local sales representative for additional information.

 **Important:** Two additional WEM processes are pre-configured to be monitored by the Process Monitor: the Postgres database process and the Apache webserver process. These appear in the psmon.cfg file but cannot be altered during the installation process.

The following table identifies the default rules configured for each of the above processes.

Table 6. Default Rules for WEM Processes

Process	Default Rule
EMS Server	<code><Process /<ems_dir>/server/bin/server>spawncommand (cd /<ems_dir>/server; /<ems_dir>/server/bin/server)pidfile /<ems_dir>/server/server.pidnumretry 10tmintval 330</Process></code>
Bulkstat Server	<code><Process /<ems_dir>/server/bin/bulkstatserver>spawncommand (cd /<ems_dir>/server; /<ems_dir>/server/bin/bulkstatserver)pidfile /<ems_dir>/server/bsserver.pidnumretry 10tmintval 330</Process></code>
Bulkstat Parser	<code><Process /<ems_dir>/server/bin/bulkstatparser>spawncommand (cd /<ems_dir>/server; /<ems_dir>/server/bin/bulkstatparser)pidfile /<ems_dir>/server/bulkstatparser.pidnumretry 10tmintval 330</Process></code>
Script Server	<code><Process /<ems_dir>/server/bin/scriptsrv>spawncommand (cd /<ems_dir>/server; /<ems_dir>/server/bin/scriptsrv)pidfile /<ems_dir>/server/script.pidnumretry 10tmintval 330</Process></code>
Postgres Database	<code><Process /<ems_dir>/postgresx.x.x/bin/postmaster -i>spawncommand /<ems_dir>/server/scripts/postgresctl startpidfile /<ems_dir>/postgresx.x.x/data/postmaster.pid</Process></code>

■ Default Rules

Process	Default Rule
Apache Webserver	<Process /<ems_dir>/apache/bin/httpd -f /<ems_dir>/apache/conf/httpd.conf> spawncmd /<ems_dir>/apache/bin/apachectl start pidfile /<ems_dir>/apache/logs/httpd.pid </Process>

Verifying the Process Monitor Status

The status of the Process Monitor can be checked at any time by executing either of the following commands:

```
ps -ef | grep psmon
```

or

```
./serv monitor
```

The first command indicates whether or not an active psmon process is running. The second command performs one of the following:

- If the Process Monitor is stopped, executing this command is equivalent to executing the **./serv monitor start** command (refer to the [Manually Starting the Process Monitor](#) section in this chapter).
- If the Process Monitor is currently running, a message is displayed indicating that it is running. A prompt is also provided that allows you to restart the process. To restart the process, enter **yes**.

Manually Stopping the Process Monitor

Upon installation of the WEM, the Process Monitor is started automatically. This section provides instructions for manually disabling it. This can be useful if changes are made to the configuration file.

Follow the instructions below to manually stop the Process Monitor.

Step 1 Login as the root user.

Step 2 Go to the directory in which the WEM Server application file is located. By default, this is the `/<ems_dir>/server` directory. Enter the following command:

```
cd /<ems_dir>/server
```

Step 3 Stop the Process Monitor by entering the following command:

```
./serv monitor stop
```

Step 4 Verify that the Process Monitor has stopped by executing the following command:

```
ps -ef | grep psmon
```

If the Process Monitor was successfully stopped, this command finds no active process and returns no result.

Manually Starting the Process Monitor

Upon installation of the WEM, the Process Monitor is started automatically. However, if the process was stopped, it can be started using the information and instructions in this section.

Step 1 Login as the root user.

Step 2 Go to the directory in which the WEM Server application file is located. By default, this is the *<ems_dir>/server* directory. Enter the following command:

```
cd /<ems_dir>/server
```

Step 3 Start the Process Monitor by entering the following command:

```
./serv monitor start
```

Once the Process Monitor is started, a status message is displayed. The process identification number assigned to the psmon process, and the directory in which the created log file is located is also displayed.

Running the Process Monitor as a Stand-alone Application

As mentioned previously, the Process Monitor can be run as a background daemon (the default operation when enabled during the installation of the WEM) or a stand-alone application.

This section provides information and instructions for running the Process Monitor as a stand-alone application from the command line interface.

To run the Process Monitor from the command line, use the following instructions:

- Step 1** Login as the root user.
- Step 2** Go to the directory in which the Process Monitor application file is located. By default, this is the `/<ems_dir>/server` directory. Enter the following command:

```
cd /<ems_dir>/server
```

- Step 3** Launch the Process Monitor application by entering the following command:

```
./psmon [--conf=filename] [--daemon] [--cron] [--user=user] [--  
adminemail=emailaddress] [--dryrun] [--help] [--version]
```

Keyword/Variable	Description
<code>--conf=<i>filename</i></code>	Specify an alternate configuration file name (other than the <i>psmon.cfg</i> file).
<code>--daemon</code>	Start as background daemon.
<code>--cron</code>	Disables already running errors when trying to launch (i.e. with the <code>--daemon</code> option).
<code>--user=<i>user</i></code>	Specifies that only processes running under the specified username should be scanned.
<code>--adminemail=<i>emailaddress</i></code>	Specifies the e-mail address to send notifications to.
<code>--dryrun</code>	Provides notifications but does not kill or spawn new processes.
<code>--help</code>	Displays the supported keywords.
<code>--version</code>	Displays the version information.

Depending on the command used, the rules dictated by the configuration file are executed.

Chapter 6

Enhanced WEM Logging

The WEM application is equipped with enhanced logging functionality that provides the user with the ability to:

- Dynamically change logger parameter settings in real-time through the use of text-based Extensible Markup Language (XML) configuration files.
- Tailor both the log message and log file format to meet your needs.
- Provide log messages for different severity levels.
- Filter log messages.

This chapter includes the following topics:

- [Supported Components](#)
- [Configuring Appender Settings](#)
- [Configuring Logger Settings](#)
- [Configuring Log Message Filters](#)
- [Configuring Support for Dynamic Logging Updates](#)

Supported Components

Enhanced logging functionality is supported for the following WEM components:

- **WEM Server:** Logging for the server component of the WEM is facilitated by the *emslogger.xml* file located in the `/<ems_dir>/server/etc` directory by default. This component consists of a number of categories (called loggers) as described in the following table.

Table 7. EMS Server Component Logger Categories

Category	Description
AAARADIUS	Pertains to authentication, authorization, and accounting (AAA) functionality using the RADIUS protocol functionality.
ADHOCRPT	Pertains to ad-hoc report generation functionality
AlarmMgmtMain	Pertains to SNMP alarm management functionality.
APN	Pertains to Access Point Name (APN) functionality
CA	Pertains to Context Administration (CA) functionality.
CAT	Pertains to Config Audit Trail (CAT) functionality.
CDR	Pertains to Charging Detail Record (CDR) functionality.
CHARGINGSVC	Pertains to integrated Enhanced Charging Service (ECS) functionality.
CPU	Pertains to system Central Processing Unit (CPU) state information.
CSM	Pertains to Client Session Management (CSM) functionality.
CSP	Pertains to the system's Card, Slot, Port (CSP) software task.
CSS	Pertains to Content Service Steering (CSS) functionality.
DB	Pertains to Data Base (DB) functionality.
DHCP	Pertains to DHCP functionality.
FM	Pertains to Fault Management (FM) functionality.
GBLCMDS	Pertains to system Global Commands (GBLCMDS) functionality.
starent-tableGGSN	Pertains to GGSN functionality.
starent-tableGTPC	Pertains to GTP Control (GTPC) functionality.
GTPP	Pertains to GTP Prime (GTPP) functionality.
IMGCACHE	Pertains to system Information Cache (IMGCACHE) functionality.
IMGKA	Pertains to system Keep-Alive (IMGKA) functionality.
IMGLicense	Pertains to system session and feature-use licensing.

Category	Description
Interceptor	Pertains to Client interceptor methods functionality.
IPSec	Pertains to IP Security functionality.
L2TP	Pertains to L2TP functionality.
Logs	Pertains to system log functionality.
MIP	Pertains to Mobile IP functionality.
Monitor	Pertains to Monitor functionality.
NR	Pertains to Network Reachability Server Configuration functionality.
ORBEM	Pertains to Common Object Broker Request Architecture (CORBA) functionality.
OSPF	Pertains to OSPF routing functionality.
Pdsn	Pertains to PDSN functionality.
PM	Pertains to Process Monitor (PM) functionality.
PortMon	Pertains to system port monitoring functionality.
PPP	Pertains to PPP functionality.
PS	Pertains to polling support functionality.
RIP	Pertains to RIP routing functionality.
RP	Pertains to RP interface functionality.
ScbrSessMgt	Pertains to subscriber session management functionality.
SessionSubsystem	Pertains to the system session subsystem software.
SNMP	Pertains to SNMP functionality.
SVPN	Pertains to the system Virtual Private Network (VPN) software tasks.
System	Pertains to system functionality.
TCA	Pertains to threshold crossing alert functionality.
Topology	Pertains to Topology interface functionality.
UA	Pertains to User Administration functionality.
UCM	Pertains to Access Service Configuration (UCM) functionality.
UPref	Pertains to User Preferences functionality.
SWU	Pertains to Software Upgrade functionality.
ConfigBackup	Pertains to the Web Element Manager's configuration backup functionality.

- **Bulk Statistics Parser:** Logging for the Bulk Statistic Parser component of the WEM is facilitated by the *bsparserlogger.xml* file located in the `/<ems_dir>/server/etc` directory by default. This component is responsible for analyzing information collected by the Bulk Statistic Server.

- **Bulk Statistics Server:** Logging for the Bulk Statistic Server component of the WEM is facilitated by the *bsserverlogger.xml* file located in the `<ems_dir>/server/etc` directory by default. This component is responsible for collecting bulk statistic information from the system.
- **Script Server:** Logging for the Script Server component of the WEM is facilitated by the *scriptlogger.xml* file located in the `<ems_dir>/server/etc` directory by default. This component supports the ability to execute specific scripts upon the receipt of SNMP alarms.
- **NorthBound Server:** Logging for the NorthBound Server component of the WEM is facilitated by the *nbserverlogger.xml* file located in the `<ems_dir>/server/etc` directory by default. This component is responsible for collecting NB server information from the system.



Important: The NorthBound (NB) Server process is customer-specific and is not operational without the appropriate license. Please contact your local sales representative for additional information.

The XML configuration file for each of the above components consists of the following configurable elements:

- **Appender settings:** Control log file parameters such as naming, output location, format, and sizing specifications.
- **Logger settings:** Control logging parameters for the specified category such as whether or not to use appender settings and the log level. As described previously, the WEM Server component consists of multiple loggers. There is a single logger for the other components.
- **Root element:** Contains references to other appenders that should be added to loggers contained in the XML configuration file. In addition, this element contains a parameter that dictates how often the system is to scan and incorporate changes made to the logger configuration. (Additional information on configuring the scan frequency is provided in the [Configuring Support for Dynamic Logging Updates](#) section of this chapter.)

Configuring Appender Settings

Appender settings control log file parameters such as naming, output location, format, and sizing specifications.

Appenders are defined by their class. Each class has related parameters that are configurable. The following appender classes are supported:

- Asynchronous Appender
- Console Appender
- File Appender
- Rolling File Appender
- Daily Rolling File Appender
- Socket Appender
- Telnet Appender
- SMTP Appender
- Syslog Appender

Detailed information for each of the above classes is provided in the sections that follow.

By default, each logging configuration file has a single Rolling File Appender configured called *Main*. Each logger within the file is configured to use this appender by default. (It is referenced in the *root* element in the configuration file.) Additional appenders can be added to the configuration file using a text editor (such as Vi Editor) if desired.

Asynchronous Appender Settings

Asynchronous appenders are used to log events asynchronously. It uses a bounded buffer to store logging events. A separate thread is used to serve the events in its bounded buffer.

Multiple appenders can be attached to an Asynchronous appender. In this scenario, this appender collects the events sent to it and then, dispatches them to all the appenders that are attached to it.

Asynchronous appenders have the following format:

```
<appender name="appender_name" class="AsyncAppender">
  <param name="BufferSize" value="size"/>
  <appender-ref ref="attached_appender"/>
</appender>
```

The variables identified in the format above are described in the following table.

Table 8. Asynchronous Appender Variable Descriptions

Variable	Description
----------	-------------

Variable	Description
<i>appender_name</i>	The name of the appender.
<i>size</i>	Specifies the number of events to be stored in buffer. This is configured as a non-negative integer value. The default is 128 events.
<i>attached_appender</i>	The name of an appender to be attached to this appender.

Console Appender Settings

Console appenders display log events to the console display.

Console appenders have the following format:

```
<appender name="appender_name" class="ConsoleAppender">
  <param name="Target" value="output" />
  <layout class="layout_class">
    <param name="ConversionPattern" value="conv_pattern" />
  </layout>
</appender>
```

The variables identified in the format above are described in the following table.

Table 9. Console Appender Variable Descriptions

Variable	Description
<i>appender_name</i>	The name of the appender.
<i>output</i>	Specifies the file output as either stdout or stderr. The default target is stdout.
<i>layout_class</i>	Specifies the format of the log file output. Refer to the Log File Output Formats section of this chapter for information on supported output formats.
<i>conv_pattern</i>	Specifies the conversion pattern used to format event related information. Refer to the <i>Pattern Layout Supported Conversion Characters</i> table for a list of supported conversion characters.

File Appender Settings

This appender adds log events to a file.

File appenders have the following format:

```

<appender name="appender_name" class="FileAppender">
  <param name="File" value="file_name" />
  <param name="Append" value="append_option" />
  <layout class="layout_class"> <param name="ConversionPattern"
value="conv_pattern" />
  </layout>
</appender>

```

The variables identified in the format above are described in the following table.

Table 10. File Appender Variable Descriptions

Variable	Description
<i>appender_name</i>	The name of the appender.
<i>file_name</i>	Specifies the name of the output file.
<i>append_option</i>	Dictates whether log information will be appended to the file or not. This can be set to either of the following options: <ul style="list-style-type: none"> • true : Append the information; this is the default setting. • false : Do not append the information.
<i>layout_class</i>	Specifies the format of the log file output. Refer to Log File Output Formats section of this chapter for information on supported output formats.
<i>conv_pattern</i>	Specifies the conversion pattern used to format event related information. Refer to the <i>Pattern Layout Supported Conversion Characters</i> table for a list of supported conversion characters.

Rolling File Appender Settings

This appender type extends the File Appender capability to backup the log files when they reach a certain size. This is the default appender type.

Rolling File appenders have the following format:

```

<appender name="appender_name" class="RollingFileAppender">
  <param name="File" value="file_name" />
  <param name="Append" value="append_option" />
  <param name="MaxFileSize" value="size" />
  <param name="MaxBackupIndex" value="max_backups" />

```

```

    <layout class="layout_class">
    <param name="ConversionPattern" value="conv_pattern"/>
    </layout>
</appender>

```

The variables identified in the format above are described in the following table.

Table 11. Rolling File Appender Variable Descriptions

Variable	Description
<i>appender_name</i>	The name of the appender. By default, each configuration file has a single appender configured called Main - each logger within the file are configured to use this appender by default. Additional appenders can be added to the configuration file using the defined format. This allows you to specify an appender for each logger if desired.
<i>file_name</i>	Specifies the name of the output file.
<i>append_option</i>	Dictates whether log information will be appended to the file or not. This can be set to either of the following options: <ul style="list-style-type: none"> • true : Append the information; this is the default setting. • false : Do not append the information.
<i>size</i>	Specifies the maximum size (in mega bytes) a log file can reach before creating a backup file and starting a new log file. This can be configured to any integer value from 0 to (263-1). The suffixes “KB”, “MB” or “GB” so that the integer is interpreted being expressed respectively in kilobytes, megabytes or gigabytes. (For example, the value “10KB” is interpreted as 10240 Bytes.) The default value is 5MB.
<i>max_backups</i>	Specifies How many backup files are kept before the oldest is erased. It can be configured as a non-negative integer value. A value of 0 generates no backup files and truncates the log file when it reaches MaxFileSize. The default value is 10.
<i>layout_class</i>	Specifies the format of the log file output. Refer to the Log File Output Formats section of this chapter for information on supported output formats.
<i>conv_pattern</i>	Specifies the conversion pattern used to format event related information. Refer to the <i>Pattern Layout Supported Conversion Characters</i> table for a list of supported conversion characters.

Daily Rolling File Appender Settings

This appender extends the File Appender capability so that the underlying file is rolled over at a user chosen frequency. The rolling schedule is specified by the DatePattern option. A formatted version of the date pattern is used as the suffix for the rolled file name.

Daily Rolling File appenders have the following format:

```

<appender name="appender_name" class="DailyRollingFileAppender">
  <param name="File" value="file_name" />
  <param name="Append" value="append_option" />
  <param name="DatePattern" value="date_format" />
  <layout class="layout_class">      <param name="ConversionPattern"
value="conv_pattern" />
  </layout>
</appender>

```

The variables identified in the format above are described in the following table.

Table 12. Daily Rolling File Appender Variable Descriptions

Variable	Description
<i>appender_name</i>	The name of the appender. By default, each configuration file has a single appender configured called <i>Main</i> - each logger within the file are configured to use this appender by default. Additional appenders can be added to the configuration file using the defined format. This allows you to specify an appender for each logger if desired.
<i>file_name</i>	Specifies the name of the output file.
<i>append_option</i>	Dictates whether log information will be appended to the file or not. This can be set to either of the following options: <ul style="list-style-type: none"> • true : Append the information; this is the default setting. • false : Do not append the information.

Variable	Description
<code>date_format</code>	<p>Specifies the date format. The following time and date options are supported:</p> <ul style="list-style-type: none"> • %a -- Abbreviated weekday name • %A -- Full weekday name • %b -- Abbreviated month name • %B -- Full month name • %c -- Standard date and time string • %d -- Day of month as a decimal(1-31) • %H -- Hour(0-23) • %I -- Hour(1-12) • %j -- Day of year as a decimal(1-366) • %m -- Month as decimal(1-12) • %M -- Minute as decimal(00-59) • %p -- Locale's equivalent of AM or PM • %Q -- Millisecond as decimal (000-999) • %S -- Second as decimal(00-59) • %U -- Week of year, Sunday being first day(0-53) • %w -- Weekday as a decimal(0-6, Sunday being 0) • %W -- Week of year, Monday being first day(0-53) • %x -- Standard date string • %X -- Standard time string • %y -- Year in decimal without century(0-99) • %Y -- Year including century as decimal • %Z -- Time zone name • %% -- The percent sign
<code>layout_class</code>	Specifies the format of the log file output. Refer to the Log File Output Formats section of this chapter for information on supported output formats.
<code>conv_pattern</code>	Specifies the conversion pattern used to format event related information. Refer to the <i>Pattern Layout Supported Conversion Characters</i> table for a list of supported conversion characters.

For example, if the File parameter is set to `abc.log` and the DatePattern parameter is set to `.%Y-%m-%d`, on 2001-02-16 at midnight, the logging file `abc.log` is copied to `abc.log.2001-02-16` and logging for 2001-02-17 will continue in `abc.log` until it rolls over the next day.

Socket Appender Settings

This appender has the following properties:

- If sent to a *Socknode*, remote logging is non-intrusive as far as the log event is concerned. In other words, the event will be logged with the same time stamp, nested diagnostic Context, and location information as if it were logged locally by the client.
- Socket appenders do not use a layout. They ship a serialized *LoggingEvent* object to the server side.
- Remote logging uses the TCP protocol. Consequently, if the server is reachable, then log events eventually arrive at the server.
- If the remote server is down, the logging requests are simply dropped. However, if and when the server comes back up, event transmission is resumed transparently. This transparent re-connection is performed by a connector thread which periodically attempts to connect to the server.

Socket appenders have the following format:

```
<appender name="appender_name" class="SocketAppender">
  <param name="RemoteHost" value="host"/>
  <param name="Port" value="port_no"/>
</appender>
```

The variables identified in the format above are described in the following table.

Table 13. Socket Appender Variable Descriptions

Variable	Description
<i>appender_name</i>	The name of the appender.
<i>host</i>	Specifies the host to log messages to.
<i>port_no</i>	Specifies the port number over which to log events.

Telnet Appender Settings

This appender specializes in writing to a read-only socket. The output is provided in a telnet-friendly way so that a log can be monitored over TCP/IP. Clients using telnet connect to the socket and receive log data. This is handy for remote monitoring, especially when monitoring a servlet.

Telnet appenders have the following format:

```
<appender name="appender_name" class="TelnetAppender">
  <param name="RemoteHost" value="host"/>
  <param name="Port" value="port_no"/>
```

```
</appender>
```

The variables identified in the format above are described in the following table.

Table 14. Telnet Appender Variable Descriptions

Variable	Description
<i>appender_name</i>	The name of the appender.
<i>host</i>	Specifies the host to log messages to.
<i>port_no</i>	Specifies the port number over which to log events.

SMTP Appender Settings

This appender supports the sending of an e-mail when a specific logging event occurs, typically on errors or fatal errors.

The number of logging events delivered in this e-mail depend on the value of *BufferSize* option. The SMTP Appender keeps only the last *BufferSize* logging events in its cyclic buffer. This keeps memory requirements at a reasonable level while still delivering useful application context.

SMTP appenders have the following format:

```
<appender name="appender_name" class="SMTPAppender">
  <param name="BufferSize" value="size" />
  <param name="SMTPHost" value="smtp_host" />
  <param name="From" value="sender" />
  <param name="To" value="recipient" />
  <param name="Subject" value="subject" />
  <layout class="layout_class">
    <param name="ConversionPattern" value="conv_pattern" />
  </layout>
</appender>
```

The variables identified in the format above are described in the following table.

Table 15. SMTP Appender Variable Descriptions

Variable	Description
<i>appender_name</i>	The name of the appender.

Variable	Description
<i>size</i>	Specifies the maximum number of logging events to collect in a cyclic buffer. When the <i>BufferSize</i> is reached, the oldest events are deleted as new events are added to the buffer. The size can be configured to a non-negative integer value. The default size of the cyclic buffer is 512 events.
<i>smtp_host</i>	Specifies the SMTP mail server.
<i>sender</i>	Specifies the e-mail address of the sender.
<i>recipient</i>	Specifies the e-mail address of the recipient.
<i>subject</i>	Specifies a subject for the e-mail.
<i>layout_class</i>	Specifies the format of the log file output. Refer to the Log File Output Formats section of this chapter for information on supported output formats.
<i>conv_pattern</i>	Specifies the conversion pattern used to format event related information. Refer to the <i>Pattern Layout Supported Conversion Characters</i> table for a list of supported conversion characters.

Log File Output Formats

The WEM enhanced logging function provides the ability to specify the log file output format. Layout configuration is performed using the *layout class* parameter.

The following formats are supported:

- HTML Layout
- TTCC Layout
- Simple Layout
- Pattern Layout

Detailed information for each of the above classes is provided in the sections that follow.

HTML Layout

This layout displays events in HTML tables. For each event, the following fields are provided:

- **Time:** Event time
- **Thread:** Event thread
- **Level:** Event severity Level
- **Category (Module):** The enhanced logging function category that generated the event
- **Message:** Event description

Use the following parameter configuration to use the HTML Layout:

```
<layout class="HTMLLayout" />
```


An example of this layout's output is shown below.

Log session start time 1970-01-14 00:39:14,511

Time	Thread	Level	Category	Message
2005-09-01 06:01:52.695	1	ALL	MAIN	Initializing Starent EMS Server 5.0....
NDC: main				
2005-09-01 06:01:52.705	1	DEBUG	MAIN	Running mode of EMS : BOTH
NDC: main				
2005-09-01 06:01:52.711	1	DEBUG	DB	Entering in DBData::initialize...
NDC: main DBData::initialize				

TTCC Layout

This layout consists of Time, Thread, Category, and nested diagnostic Context information. Each of these items can be individually enabled or disabled. The time format depends on the *DatePattern* used.

 **Caution:** Do not use the same TTCC Layout instance from within different appenders. The TTCC Layout may not handle event threads properly when used in this way.

Use the following parameter configuration to use the TTCC Layout:

```
<layout class="TTCCLayout" />
    <param name="DatePattern" value="date_format" />
</layout>
```

The variables identified in the format above are described in the following table.

Table 16. TTCC Layout Variable Descriptions

Variable	Description

Variable	Description
<i>date_format</i>	<p>Specifies the date format. The following time and date options are supported:</p> <ul style="list-style-type: none"> • %a -- Abbreviated weekday name • %A -- Full weekday name • %b -- Abbreviated month name • %B -- Full month name • %c -- Standard date and time string • %d -- Day of month as a decimal(1-31) • %H -- Hour(0-23) • %I -- Hour(1-12) • %j -- Day of year as a decimal(1-366) • %m -- Month as decimal(1-12) • %M -- Minute as decimal(00-59) • %p -- Locale's equivalent of AM or PM • %Q -- Millisecond as decimal (000-999) • %S -- Second as decimal(00-59) • %U -- Week of year, Sunday being first day(0-53) • %w -- Weekday as a decimal(0-6, Sunday being 0) • %W -- Week of year, Monday being first day(0-53) • %x -- Standard date string • %X -- Standard time string • %y -- Year in decimal without century(0-99) • %Y -- Year including century as decimal • %Z -- Time zone name • %% -- The percent sign

An example of this layout's output is shown below.

```
176 [main] INFO examples.Sort - Populating an array of 2 elements in
reverse order.
```

```
225 [main] INFO examples.SortAlgo - Entered the sort method.
```

Simple Layout

This layout displays the event severity level and the event description.

Use the following parameter configuration to use the Simple Layout:

```
<layout class="SimpleLayout"/>
```

An example of this layout's output is shown below.

```
INFO - Populating an array of 2 elements in reverse order.
INFO - Entered the sort method.
```

Pattern Layout

This layout allows the specification of an output format through the configuration of a pattern string. It formats the log event and returns it as a string.

Use the following parameter configurations to use the Pattern Layout:




```
<layout class="org.apache.log4j.PatternLayout"/>
  <param name="ConversionPattern" value="pattern"/>
</layout>
```

pattern specifies the conversion characters used to format the output. The following table provides information on supported conversion characters.

Table 17. Pattern Layout Supported Conversion Characters

Character	Description
c	Used to output the logger of the logging event. The logger conversion specifier can be optionally followed by precision specifier, that is a decimal constant in brackets. If a precision specifier is given, then only the corresponding number of right most components of the logger name will be printed. By default the logger name is printed in full. For example, for the logger name "a.b.c" the pattern %c{2} will output "b.c".

Character	Description
d	<p>Used to output the date of the logging event. The date conversion specifier may be followed by a date format specifier enclosed between braces. For example, %d{%H:%M:%S} or %d{%d %b %Y %H:%M:%S}. If no date format specifier is given then ISO8601 format is assumed. The following format options are possible:</p> <ul style="list-style-type: none"> • %a -- Abbreviated weekday name • %A -- Full weekday name • %b -- Abbreviated month name • %B -- Full month name • %c -- Standard date and time string • %d -- Day of month as a decimal(1-31) • %H -- Hour(0-23)%I -- Hour(1-12) • %j -- Day of year as a decimal(1-366) • %m -- Month as decimal(1-12) • %M -- Minute as decimal(00-59) • %p -- Locale's equivalent of AM or PM • %Q -- Millisecond as decimal (000-999) • %S -- Second as decimal(00-59) • %U -- Week of year, Sunday being first day(0-53) • %w -- Weekday as a decimal(0-6, Sunday being 0) • %W -- Week of year, Monday being first day(0-53) • %x -- Standard date string • %X -- Standard time string • %y -- Year in decimal without century(0-99) • %Y -- Year including century as decimal • %Z -- Time zone name • %% -- The percent sign <p>You can also use the enhanced logging function's predefined date formatters. These can be specified using one of the following strings:</p> <ul style="list-style-type: none"> • ABSOLUTE : AbsoluteTimeDateFormat • DATE : DateTimeDateFormat • ISO8601 : ISO8601DateFormat <p>For example, %d{ISO8601} or %d{ABSOLUTE}.</p>

Character	Description
F	Used to output the file name where the logging request was issued.  Important: Generating caller location information is extremely slow. It's use should be avoided unless execution speed is not an issue.
l	Used to output location information of the caller which generated the logging event.  Important: Though location information can be very useful, it's generation is extremely slow. It's use should be avoided unless execution speed is not an issue.
L	Used to output the line number from where the logging request was issued.  Important: Generating line number information is extremely slow. It's use should be avoided unless execution speed is not an issue.
m	Used to output the application supplied message associated with the logging event.
n	Outputs the platform dependent line separator character or characters. This conversion character offers practically the same performance as using non-portable line separator strings such as “\n”, or “\r\n”. Thus, it is the preferred way of specifying a line separator.
p	Used to output the level (priority) of the logging event.
r	Used to output the number of milliseconds elapsed since the start of the application until the creation of the logging event.
t	Used to output the name of the thread that generated the logging event.
x	Used to output the NDC (nested diagnostic context) associated with the thread that generated the logging event.
%	The sequence %% outputs a single percent sign.

An example of this layout's output when the following conversion pattern was specified is shown below:

```
%d{%d:%b:%Y %H:%M:%S:%Q}%6p %3t [%-16x] %8m%n
```

```
25:Aug:2005 13:14:27:494 INFO 1 [main DBData::initialize] DB info
initialized
```


Configuring Logger Settings

Loggers are configured for each of the WEM components described previously in this document. Additionally, for the WEM Server component which consists of multiple categories, loggers are configured for each of the categories.

Loggers are configured using the following format:

```
<logger name="name" additivity="add_option">
    <level value="severity" />
    <appender-ref ref="appender_name" />
</logger>
```

Table 18. Logger Variable Descriptions

Variable	Description
<i>name</i>	The name of the WEM component of category for which logging parameters are being configured.
<i>add_option</i>	Specifies whether or not the logger is to inherit the appenders defined within the root element of the configuration file. The following options are supported: <ul style="list-style-type: none"> • true : Use appender defined within root (default) • false : Do not use appender defined within root
<i>severity</i>	Specifies the severity level of events to log. The following severity levels are supported: <ul style="list-style-type: none"> • OFF, 0 • DEBUG, 1 • INFO, 2 • WARN, 3 • SEVERE, 4 • FATAL, 5 • All, 6
<i>appender_name</i>	The name of the appender to use for this logger. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">  Important: This parameter is used if the <i>additivity</i> parameter is set to <i>false</i>. </div>

Configuring Log Message Filters

Log messages can be filtered based on the following criteria:

- Level match
- Level range
- String match
- Deny filter

Detailed information for each of the above classes is provided in the sections that follow.

Level Match Filters

This filter displays or rejects logs for events that match the specified severity level.

Level Match filters are configured using the following format:

```
<filter class="LevelMatchFilter">
  <param name="LevelToMatch" value="severity" />
  <param name="AcceptOnMatch" value="accept_option" />
</filter>
```

Table 19. Level Match Filter Variable Descriptions

Variable	Description
<i>severity</i>	<p>Specifies the severity level of events to filter. The following severity levels are supported:</p> <ul style="list-style-type: none"> • OFF, 0 • DEBUG, 1 • INFO, 2 • WARN, 3 • SEVERE, 4 • FATAL, 5 • All, 6

Variable	Description
<i>accept_option</i>	<p>Specifies whether or not the logger is to accept logs that match the specified severity. The following options are supported:</p> <ul style="list-style-type: none"> • true : Logs matching the severity are accepted • false : Logs matching the severity are not accepted

Level Range Filters

This filter displays or rejects logs for events that fall within the specified minimum and maximum severity levels.

Level Range filters are configured using the following format:

```
<filter class="LevelRangeFilter">
  <param name="LevelMax" value="max_sev" />
  <param name="LevelMin" value="min_sev" />
  <param name="AcceptOnMatch" value="accept_option" />
</filter>
```

Table 20. Level Range Filter Variable Descriptions

Variable	Description
<i>max_sev</i>	<p>Specifies the maximum severity level for the range of events to filter. The following severity levels are supported:</p> <ul style="list-style-type: none"> • OFF, 0 • DEBUG, 1 • INFO, 2 • WARN, 3 • SEVERE, 4 • FATAL, 5 • All, 6

Variable	Description
<i>min_sev</i>	<p>Specifies the minimum severity level for the range of events to filter. The following severity levels are supported:</p> <ul style="list-style-type: none"> • OFF, 0 • DEBUG, 1 • INFO, 2 • WARN, 3 • SEVERE, 4 • FATAL, 5 • All, 6
<i>accept_option</i>	<p>Specifies whether or not the logger is to accept logs that fall within the specified severity range. The following options are supported:</p> <ul style="list-style-type: none"> • true : Logs matching the criteria are accepted • false : Logs not matching the criteria are not accepted

String Match Filters

This filter displays or rejects logs for events based on whether or not any part of the event message matches the specified string.

String Match filters are configured using the following format:

```
<filter class="StringMatchFilter">
  <param name="StringToMatch" value="string" />
  <param name="AcceptOnMatch" value="accept_option" />
</filter>
```

Table 21. String Match Filter Variable Descriptions

Variable	Description
<i>string</i>	Specifies the text string upon which to filter the log.
<i>accept_option</i>	<p>Specifies whether or not the logger is to accept logs that match the specified severity. The following options are supported:</p> <ul style="list-style-type: none"> • true : Logs matching the criteria are accepted • false : Logs not matching the criteria are not accepted

Deny Filters

This filter denies all log messages regardless of severity.

Deny filters are configured using the following format:

```
<filter class="DenyAllFilter">
```

This can be used in conjunction with other log message filters that display logs based on the specified criteria. For example, the following configuration displays Warning-level logs and denies all others:

```
<filter class="LevelMatchFilter">  
  <param name="LevelToMatch" value="WARN" />  
  <param name="AcceptOnMatch" value="true"/>  
</filter>  
<filter class="DenyAllFilter">
```

Configuring Support for Dynamic Logging Updates

A key benefit of the WEM's logging functionality is the ability to dynamically incorporate changes made to the logging configuration without restarting server processes.

The WEM periodically checks the XML configuration files for changes. If the changes are found, they are automatically applied.

Each XML configuration file contains a parameter called delay value that is used to specify the frequency with which the server looks for changes. This parameter is defined under the root element as shown below:

```
<root>

  <priority value="WARN" />

  <!-- A delay used by the Watchdog thread to continuously read/check
  the modified configuration applies to EMS Logger-->

  <delay value="3000" />

  <appender-ref ref="Main" />

</root>
```

The delay is measured in milliseconds. The default value is 3000 milliseconds.

Chapter 7

WEM Database Maintenance

The following table lists the PostgreSQL databases that can be created during the installation of the WEM application. Certain databases are only created if their respective functionality is enabled in the application. Refer to the [Determining Available Databases](#) section of this chapter for information on determining which databases have been created.

Table 22. Databases Created by the WEM

Database Name	Description
trapdb	Contains tables pertaining to traps and alarms generated by managed systems.
configdb	Contains tables pertaining to the system and WEM configuration.
mibdb	Contains tables pertaining to SNMP management information base (MIB) objects from managed systems.
templateX	Default PostgreSQL database template(s). X represents the numeric instance of the template.
auditdb	Contains tables pertaining to WEM audit trail information.
bsdb	Contains tables pertaining to bulk statistics generated by managed systems.
p2pdb	Contains tables pertaining to P2P statistics generated by managed systems.

This chapter provides information and instructions for performing the following routine maintenance on these databases to ensure proper data processing and integrity:

- [Vacuuming the Databases](#)
- [Backing-up WEM Databases](#)



Caution: To ensure proper operation and data integrity, the PostgreSQL database instances installed with the WEM should only be used by the application.

This chapter includes the following topics:

- [Determining Available Databases](#)
- [Vacuuming the Databases](#)
- [Backing-up WEM Databases](#)

Determining Available Databases

Follow the instructions in this section to determine which databases were created during the installation of the WEM application. These instructions assume that you are logged in to the server on which the application is installed as the user root and have access to the server's command line.

Step 1 Go to the "bin" sub-directory of the PostgreSQL installation directory (*/<ems_dir>/postgres.x.x/* by default) by entering the following command:

```
cd /<ems_dir>/postgres/bin
```

Step 2 Enter the PostgreSQL interactive terminal for *template1* database by entering the following command:

```
./psql -U postgres_name template1
```

postgres_name is the name of the PostgreSQL database administrator (postgres by default).

The following prompt appears:

```
template1#
```

Step 3 Display available databases by entering the following command:

```
select datid,datname from pg_stat_database;
```

A table appears listing the database name and its corresponding identification number.

Step 4 Exit the PostgreSQL interactive terminal by entering the following command:


```
\q
```

“Vacuuming” the Databases

Standard PostgreSQL operation periodically leaves older versions of records in the database even after the record has been updated or deleted. This method allows the record to remain available to other processes or transactions. As a result of frequent database deletes and/or updates, the number of these “old” records can grow and hinder database operation and performance. Excessive numbers of these “old” and unused records increase the time required for queries and consume disk space that could be better allocated for current records and processes. For these reasons, it is recommended that these “old” records be removed regularly.

The removal of these “old” records is done by “vacuuming” the database using the PostgreSQL `vacuumdb` command.

It is recommended that all WEM databases be “vacuumed” at least once a week. However, databases that undergo frequent record updates/deletions be vacuumed on a daily basis. Two such databases are the trap database (trapdb) and the bulk statistics database (bsdb).

 **Caution:** Database vacuuming should only be performed at a time when there are minimal database transactions. Typically, this would correspond to a time frame in which no configurations are being performed, infrequent alarm updates, and/or infrequent bulk statistics transfers. Before vacuuming the database, the server must check for already running vacuuming. If this is already running, then the next scheduled vacuum process must be skipped. Hence, WEM must execute only one vacuum query at a time for every database.

Periodic, automatic database vacuuming can be performed through the configuration of a text file as described in the [Configuring Automated Periodic Database Vacuuming](#) section that follows. This is the preferred method. One-time automatic vacuuming can be performed through the use of the UNIX cron application as described in the [Using Cron to Automate Database Vacuuming](#) section. Vacuuming can also be performed manually as described in the [Manually Vacuuming WEM Databases](#) section.


Configuring Automated Periodic Database Vacuuming

The WEM application contains a configuration file called `vacuum.cfg` that contains parameters related to database vacuuming operation and frequency. The file is located in the `/<ems_dir>/server/etc` directory by default.

The parameters provide the flexibility to vacuum either the database as whole or just various tables within the database. The values for these parameters can be modified using a text editor (such as Vi Editor) if required.

Each database and table is configured with a start time, and a frequency that specifies the number of hours that must pass prior to performing the vacuuming function again. For example, if vacuuming of the Configuration database is to start at 12:00 PM, and repeat after 24 hours, the parameter in the `vacuum.cfg` file would appear as follows:

```
ConfigDB = 12,24
```

 **Important:** A value of 00,00 disables vacuuming for both databases and tables.

Note that the vacuuming of the MIB database is not supported because the content changes infrequently.

The following table provides a list of the parameters within the `vacuum.cfg` file.

Table 23. Database and Table Parameters in the vacuum.cfg File

Parameter	Description	Default Setting
Type		
Vacuum_Type	<p>Specifies the type of vacuum to perform as one of the following:</p> <ul style="list-style-type: none"> • VACUUM ANALYZE : Performs the vacuum function as described previously in this chapter but also collects statistics about the proportions of duplicate values within a column and the min/max value. • VACUUM : Performs only the vacuum function. • VACUUM FULL : Physically reorders the tables. This requires an exclusive lock on each table while it is being processed. 	VACUUM ANALYZE
Database Name*		
ConfigDB	Sets vacuuming parameters for the Configuration database which contains tables pertaining to the system and WEM configuration.	00,00
TrapDB	Sets vacuuming parameters for the Trap database which contains tables pertaining to traps and alarms generated by managed systems.	00,00
AuditDB	Sets vacuuming parameters for the Audit Trail database which contains tables pertaining to WEM audit trail information.	00,00
BulkDB	Sets vacuuming parameters for the Bulk Statistics database which contains tables pertaining to bulk statistics generated by managed systems.	00,00
P2PDB	Sets vacuuming parameters for the P2P database which contains tables pertaining to protocol and threshold statistics generated by managed systems.	00,00
Table Name		
ConfigDB		
CompleteDB	This parameter dictates whether or not vacuuming will be performed on only the database or each table in the database individually. A value of 0 indicates that vacuuming is to be performed on each table. A value of 1 indicates that vacuuming is to be performed only on the database.	1
boxer	Sets vacuuming parameters for the table that contains configuration information pertaining to the system.	00,00
portmontable	Sets vacuuming parameters for the table that contains configuration information pertaining to port monitoring.	00,00
boxeruserinfo	Sets vacuuming parameters for the table that contains configuration information pertaining to administrative users configured on the system.	00,00
userpreference	Sets vacuuming parameters for the table that contains configuration information pertaining to preferences configured for WEM administrative users.	00,00
processthreshold	Sets vacuuming parameters for the table that contains configuration information pertaining to WEM process thresholds.	00,00
ippooldefaults	Sets vacuuming parameters for the table that contains configuration information pertaining to IP address pool default values.	00,00

Parameter	Description	Default Setting
schrdefaults	Sets vacuuming parameters for the table that contains information about subscriber default parameters.	00,00
csmsessioninfo	Sets vacuuming parameters for the table that contains information on the session id between client and server, client IOR, login time, and address.	00,00
bkinfo	Sets vacuuming parameters for the table that contains information required for configbackup.	00,00
graphscreeninfo	Sets vacuuming parameters for the table that contains configuration information pertaining to graph displays.	00,00
batchjobcleanup	Sets vacuuming parameters for the table that contains information required for cleanup of batch jobs.	00,00
batchjobinfo	Sets vacuuming parameters for the table that contains information required for batch jobs.	00,00
boxeronmap	Sets vacuuming parameters for the table that contains configuration information pertaining to administrative user maps configured on the system.	00,00
dbbackupinfo	Sets vacuuming parameters for the table that contains configuration information pertaining to database backup.	00,00
maptable	Sets vacuuming parameters for the table that contains configuration information pertaining to the map table.	00,00
p2pinfo	Sets vacuuming parameters for the table that contains configuration information pertaining to P2P database.	00,00
updateinfo	Sets vacuuming parameters for the table that contains configuration information pertaining to updates.	00,00
userinfo	Sets vacuuming parameters for the table that contains configuration information pertaining to WEM administrative users.	00,00
dbcurent	Sets vacuuming parameters for the table that contains configuration information pertaining to the current database.	00,00
hostname	Sets vacuuming parameters for the table that contains configuration information pertaining to host names.	00,00
syslogkeywordlist	Sets vacuuming parameters for the table that contains configuration information pertaining to the keyword log list configured on the system.	00,00
syslogmsgfileinfo	Sets vacuuming parameters for the table that contains configuration information pertaining to the message log list configured on the system.	00,00
cdpreportinfo	Sets vacuuming parameters for the table that contains configuration information pertaining to CDP reports.	00,00
filefetchinfo	Sets vacuuming parameters for the table that contains configuration information pertaining to fetching of files from the database.	00,00
ongoingsftpinfo	Sets vacuuming parameters for the table that contains configuration information pertaining to the ongoing SFTP.	00,00
TrapDB		

■ “Vacuuming” the Databases

Parameter	Description	Default Setting
CompleteDB	This parameter dictates whether or not vacuuming will be performed on only the database or each table in the database individually. A value of 0 indicates that vacuuming is to be performed on each table. A value of 1 indicates that vacuuming is to be performed only on the database.	1
trap	Sets vacuuming parameters for the table that contains information pertaining to SNMP traps received.	00,00
deletedtrap	Sets vacuuming parameters for the table that contains information pertaining to deleted SNMP traps.	00,00
forwardinginfo	Sets vacuuming parameters for the table that stores the information for forwarding the received SNMP traps in real time.	00,00
forwardpurgeinfo	Sets vacuuming parameters for the table that is used to get information about whether or not to purge the forwarded trap.	00,00
mailinfo	Sets vacuuming parameters for the table that stores trap e-mail address, e-mail type (TO, CC, or BCC), trap type and trap specific number.	00,00
mailmessage	Sets vacuuming parameters for the table that stores trap e-mail subject, trap message, trap type and trap specific number.	00,00
configure	Sets vacuuming parameters for the table that contains information pertaining to SNMP trap configuration.	00,00
schedule	Sets vacuuming parameters for the table that stores the trap severity, Audio start time, audio stop time.	00,00
forwardaddress	Sets vacuuming parameters for the table that contains information pertaining to the forward address.	00,00
pendingtrap	Sets vacuuming parameters for the table that contains information pertaining to the pending SNMP traps.	00,00
trap_current	Sets vacuuming parameters for the table that contains information pertaining to the current SNMP trap.	00,00
trapoperdetails	Sets vacuuming parameters for the table that contains information pertaining to trap operation.	00,00
AuditDB		
CompleteDB	This parameter dictates whether or not vacuuming will be performed on only the database or each table in the database individually. A value of 0 indicates that vacuuming is to be performed on each table. A value of 1 indicates that vacuuming is to be performed only on the database.	1
auditlog	Sets vacuuming parameters for the table that contains information pertaining to the WEM’s Audit Trail function.	00,00
chassisinfo	Sets vacuuming parameters for the table that contains information pertaining to the chassis.	00,00
cpuinfo	Sets vacuuming parameters for the table that contains information pertaining to the CPU.	00,00
daughtercardinfo	Sets vacuuming parameters for the table that contains information pertaining to the daughter card.	00,00

Parameter	Description	Default Setting
hardwareactivity	Sets vacuuming parameters for the table that contains information pertaining to the hardware activity.	00,00
hardwareinfo	Sets vacuuming parameters for the table that contains information pertaining to the hardware.	00,00
lcrccspioinfo	Sets vacuuming parameters for the table that contains information pertaining to Line Cards (LC), Redundant Crossbar Cards (RCC), and Switch Processor Input/Output (SPIO) cards.	00,00
pactacinfo	Sets vacuuming parameters for the table that contains information pertaining to the Packet Accelerator Card (PAC) and Telephony Accelerator Card (TAC).	00,00
smcinfo	Sets vacuuming parameters for the table that contains information pertaining to the System Management Card (SMC).	00,00
spccardinfo	Sets vacuuming parameters for the table that contains information pertaining to the Switch Processor Card (SPC).	00,00
imglastevtgentime	Sets vacuuming parameters for the table that contains information pertaining to the last event generation time of the system.	00,00
BulkDB		
CompleteDB	This parameter dictates whether or not vacuuming will be performed on only the database or each table in the database individually. A value of 0 indicates that vacuuming is to be performed on each table. A value of 1 indicates that vacuuming is to be performed only on the database.	1
card	Sets vacuuming parameters for the table that contains information pertaining to the card-level schema.	00,00
port	Sets vacuuming parameters for the table that contains information pertaining to the port-level schema.	00,00
system	Sets vacuuming parameters for the table that contains information pertaining to the system-level schema.	00,00
ggsnsystem	Sets vacuuming parameters for the table that contains information pertaining to the system-level schema for GGSN-based systems.	00,00
ppp	Sets vacuuming parameters for the table that contains information pertaining to the PPP-level schema.	00,00
mipfa	Sets vacuuming parameters for the table that contains information pertaining to the Mobile IP FA-level schema.	00,00
mipha	Sets vacuuming parameters for the table that contains information pertaining to the Mobile IP HA-level schema.	00,00
rp	Sets vacuuming parameters for the table that contains information pertaining to the PDSN-level schema.	00,00
gtpc	Sets vacuuming parameters for the table that contains information pertaining to the GGSN-level schema.	00,00
gtp	Sets vacuuming parameters for the table that contains information pertaining to the GTPP-level schema.	00,00

■ “Vacuuming” the Databases

Parameter	Description	Default Setting
ippool	Sets vacuuming parameters for the table that contains information pertaining to the IP Address Pool-level schema.	00,00
apn	Sets vacuuming parameters for the table that contains information pertaining to the APN-level schema.	00,00
lac	Sets vacuuming parameters for the table that contains information pertaining to the LAC-level schema.	00,00
radius	Sets vacuuming parameters for the table that contains information pertaining to the RADIUS-level schema.	00,00
imgaccess	Sets vacuuming parameters for the table that contains information on the XML files generated by the Bulk Statistics Server.	00,00
ecs	Sets vacuuming parameters for the table that contains information pertaining to the ECS-level schema.	00,00
misc	Sets vacuuming parameters for the table that contains information pertaining to the miscellaneous schema.	00,00
ipsg	Sets vacuuming parameters for the table that contains information pertaining to the IPSG-level schema.	00,00
asngw	Sets vacuuming parameters for the table that contains information pertaining to the ASNGW-level schema.	00,00
sgsn	Sets vacuuming parameters for the table that contains information pertaining to the SGSN-level schema.	00,00
sgtp	Sets vacuuming parameters for the table that contains information pertaining to the SGTP-level schema.	00,00
sccp	Sets vacuuming parameters for the table that contains information pertaining to the SCCP-level schema.	00,00
ss7rd	Sets vacuuming parameters for the table that contains information pertaining to the SS7RD-level schema.	00,00
mipv6ha	Sets vacuuming parameters for the table that contains information pertaining to the MIPv6 HA-level schema.	00,00
context	Sets vacuuming parameters for the table that contains information pertaining to the context-level schema.	00,00
cscf	Sets vacuuming parameters for the table that contains information pertaining to the CSCF-level schema.	00,00
ss7link	Sets vacuuming parameters for the table that contains information pertaining to the SS7 Link-level schema.	00,00
gprs	Sets vacuuming parameters for the table that contains information pertaining to the GPRS-level schema.	00,00
pdif	Sets vacuuming parameters for the table that contains information pertaining to the PDIF-level schema.	00,00
schemastatus	Sets vacuuming parameters for the table that contains information pertaining to the schema status.	00,00

Parameter	Description	Default Setting
P2PDB		
CompleteDB	This parameter dictates whether or not vacuuming will be performed on only the database or each table in the database individually. A value of 0 indicates that vacuuming is to be performed on each table. A value of 1 indicates that vacuuming is to be performed only on the database.	1
bwstat	Sets vacuuming parameters for the table that contains information pertaining to data traffic bandwidth statistics.	00,00
dailystat	Sets vacuuming parameters for the table that contains information pertaining to daily statistics.	00,00
hourlystat	Sets vacuuming parameters for the table that contains information pertaining to hourly statistics.	00,00
protocolstat	Sets vacuuming parameters for the table that contains information pertaining to protocol statistics.	00,00
sbrdailystats	Sets vacuuming parameters for the table that contains information pertaining to subscriber daily statistics.	00,00
sbrhourlystats	Sets vacuuming parameters for the table that contains information pertaining to subscriber hourly statistics.	00,00
sbrstats	Sets vacuuming parameters for the table that contains information pertaining to subscriber statistics.	00,00
tempp2p	Sets vacuuming parameters for the table that contains information pertaining to P2P statistics.	00,00
thresholdstats	Sets vacuuming parameters for the table that contains information pertaining to threshold statistics.	00,00
<p>* Any non-zero number specified for a database in the Database Name section supersedes the CompleteDB parameter setting for the database. For example, if the start value for the Configuration database is 13 and the databases corresponding CompleteDB parameter is set to 0, then vacuuming is to be done for the entire database and all of the tables. However, if there is a conflict between the start times specified for any of the tables within the database and that specified for the database itself, vacuuming will not be started for that table.</p>		

Using Cron to Automate Database Vacuuming

As mentioned previously, the UNIX cron application can be used to automate database vacuuming. It is a daemon that is capable of executing commands or scripts at regular time intervals. Additional information on cron is available through its manual pages or on the Internet.

To use cron to automate the vacuum process, add an entry to a crontab on the server on which the WEM is installed. The entry specifies the time and database to be vacuumed. For example, if you wanted to vacuum the bulk statistics database (bsdb) every day at 3:00 AM, you might add the following entry in the crontab:

```
00 03 * * * /<ems_dir>/postgres.x.x/bin/vacuumdb -U postgres -d bsdb >
/dev/null 2>&1
```

From the above example, you can see that the **vacuumdb** command is located in the bin sub-directory of the PostgreSQL installation directory (*/<ems_dir>/postgresx.x.x* by default). The -U parameter indicates the PostgreSQL database administrator name (postgres by default).

Manually Vacuuming WEM Databases

Follow the instructions in this section to manually vacuum databases used by the WEM application. These instructions assume that you are logged in to the server on which the application is installed as the user root and have access to the server’s command line.

Step 1 Ensure that the database(s) are backed-up prior to vacuuming. Refer to the [Backing-up WEM Databases](#) section of this chapter for information on performing a database backup.

Step 2 Go to the “bin” sub-directory of the Postgres installation directory (*/<ems_dir>/postgresx.x.x/* by default) by entering the following command:

```
cd /<ems_dir>/postgres/bin
```

Step 3 Vacuum the desired database by entering the following command:

```
/vacuumdb -U postgres_name -d db_name &
```


Command/Keyword	Description
<i>postgres_name</i>	The name of the PostgreSQL database administrator (postgres by default).
<i>db_name</i>	The name of the database to be vacuumed. Refer to the Determining Available Databases section of this chapter for information on determining which databases are available.

Step 4 Repeat Step 3 to vacuum additional databases.


```
select datid,datname from pg_stat_database;
```

Backing-up WEM Databases

To minimize the risk of data loss, WEM databases should be backed up on a regular basis. It is recommended that databases be backed up at least once a week. However, depending on the environment and frequency of record updates/deletes, you may choose to backup the data more often.

 **Caution:** Database backups should only be performed at a time when there are minimal database transactions. Typically, this would correspond to a time frame in which no configurations are being performed, infrequent alarm updates, and/or infrequent bulk statistics transfers.

The database backup creates a number of text files in a directory of your choosing. These text files contain the records from the various tables in the available databases. In the event of data corruption or loss, these text files can be used to restore the information.

 **Caution:** Database restoration should only be performed after the WEM application has been successfully un- and re-installed. Additionally, it should only be performed with the assistance of a qualified customer support representative.

Follow the instructions below to backup WEM application databases. These instructions assume that you are logged in to the server on which the application is installed as the user root and have access to the server's command line.

Step 1 Go to the WEM installation directory that contains database scripts (`/<ems_dir>/server/dbscripts` by default) by entering the following command:

```
cd /<ems_dir>/server/dbscripts
```

Step 2 Execute the database backup script by entering the following command:

```
./backup.sh backup /<ems_dir>/server/postgres /tmp/backup_dir  
backup_log_file backup_err_file
```

Various parameters used in the above command are described below:

- **backup:** This is the key word for taking the backup.
- **postgres_dir_path:** Path of postgres directory.
- **backup_dir_path:** Full path name of backup directory.
- **logfile:** Name of the log file for generating the log of backup. This parameter is used by WEM when called through periodic backup functionality. This file must be removed once the backup is complete.
- **errfilename:** Name of the error log file. In case of failure error code, the reason for the failure will be logged to this file. This parameter is used by WEM when called through periodic backup functionality. This file also must be removed after backup is complete.

Backup Script Error Codes

This script returns the error code, which is used to understand the script result if it is succeeded or failed. This will be helpful for client application (caller of script) to take necessary action.

Following are the supported error codes along with their description:

Error Code	Error Name	Description
0	SUCCESS	Successful
1	INVALID_ARGUMENT	Invalid argument
2	REQUIRES_SUPERUSER	This script requires superuser privileges
3	INVALID_POSTGRES_DIRECTORY	Invalid postgres directory
4	BACKUP_FILE_NOT_EXIST	Specified backup file does not exist
5	BACKUP_FAILED_WITH_ERROR	Backup failed
6	BACKUP_FILE_CREATION_FAILED	Backup file creation failed
7	DATABASE_RESTORE_FAILED	Database restore operation failed
8	POSTGRES_NOT_RUNNING	Postgres process is not running
9	SERV_SCRIPT_NOT_EXIST	<ems_server>/serv script is not present

Restoring WEM Database

This option is also used with the backup script **backup.sh**. It restores the WEM databases. No extra parameters are required for restoring the database other than the 'restore' keyword. Script itself asks for more parameters like postgres dir path, backup file location, etc.

For restoring the WEM database, enter the following command:

```
./backup.sh restore
```



Caution: **back.sh** script is used by WEM Periodic backup functionality to the backup of WEM database. It is recommended to use the WEM Periodic backup functionality to take the WEM database backup.

Chapter 8

Preparing and Using the Client Workstation

This chapter provides information on the required files and environment for the WEM client and server machines. It also provides information on the WEM user interface.

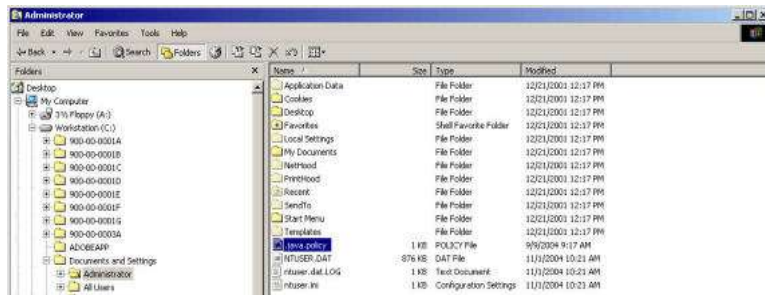
This chapter includes the following topics:

- [Placement of Required Client Files](#)
- [Accessing the WEM as a Client on the Web Element Manager Server](#)
- [Accessing the WEM using a Client Workstation](#)
- [User Interface](#)
- [Obtaining WEM Help](#)

Placement of Required Client Files

There are two files that are required to enable client access to the WEM from the client workstation. These files are:

- **Java® Runtime Environment (JRE)** - This program must be installed on the client workstation. Versions 1.5, and 1.6 are supported.
- **Java Policy File** - This file may be obtained from the WEM server when you first access the system using the client workstation. For proper authentication, this policy file must be located in an exact location, dependent upon the operating system being used on the client workstation.
 - For the Microsoft® Windows™ NT 4.0 operating system, the **.java.policy** file must be placed in the `<drive_letter>\Profiles\<user_name>` directory.
 - For the Microsoft® Windows™ 2000 and Windows™ XP operating systems, the **.java.policy** file must be placed in the `<drive_letter>\Documents and Settings\<user_name>` directory. The following figure shows this path using Windows Explorer.



- For the Microsoft® Windows™ 7 operating system, the **.java.policy** file must be placed in the `<drive_letter>\users\<user_name>` directory.
- For the Sun® Solaris® (UNIX) and Linux® operating systems, the **.java.policy** file must be placed in the user's home directory.
- Instructions on how to download the Java Policy file from the WEM server are displayed when you click the Java Policy File link, located near the left of the client application's browser display.

Accessing the WEM as a Client on the Web Element Manager Server

In some cases, users may want to access the WEM application using the WEM server as the client. For versions of Netscape earlier than 6.0 (i.e. 4.5), system environment variables must be configured to support this functionality. This section provides instructions for configuring these variables using either the C, Bourne, Korn, and Bourne-again shells.

Environment Settings for CSH

Step 1 Set the following environment variables in your `.cshrc` file:

```
setenv NPX_PLUGIN_PATH
/<java_installation_directory>/jre/plugin/sparc/ns4

setenv NPX_JRE_PATH /<java_installation_directory>

setenv THREADS_FLAG native
```

`<java_installation_directory>` is the directory in which java is installed (i.e. `/usr/java`).

Step 2 Source the `.cshrc` file (or open a new shell) and start the Netscape browser.

Environment Settings for SH, KSH, and BASH

Step 1 Set the following environment variables in your `.profile` file:

```
NPX_PLUGIN_PATH=/<java_installation_directory>/jre/plugin/sparc/ns4

export NPX_PLUGIN_PATH

NPX_JRE_PATH=/<java_installation_directory>

export NPX_JRE_PATH

export THREADS_FLAG native
```

`<java_installation_directory>` is the directory in which java is installed (i.e. `/usr/java`).

Step 2 If these variables are set in a shell, then invoke Netscape from the same shell (e.g. `/usr/dt/appconfig/netscape/netscape`).


Accessing the WEM using a Client Workstation

Using an Internet web browser, enter the following command in the address field.

```
http://<Web_Element_Manager_server_IP_address>/ems/img.html
```

The <Web_Element_Manager_server_IP_address> variable is the IP address of the WEM server entered in dotted-decimal notation.

Assuming that the Java Policy file and Java Runtime Environment (JRE) files have been loaded in their proper locations, the WEM server will push various .jar files to the client machine and then display the WEM Logon window.


 **Important:** After an upgrade or installing a new version of WEM, it is recommended that the browser cache of the client workstation should be cleared, if it is enabled. To clear the cache in Internet Explorer, click **Tools** menu -> **Internet Options**. Under the **General** tab, click **Delete Files**, click the **Delete all offline content** check box, and then click **OK**.

Logging in to the WEM

To log on to the server for the first time, use the default username of superuser and a password of superuser, which are case sensitive. Once you are successfully logged in, additional user accounts can be configured through the **Security** pull-down menu.

Use of the Superuser Account

The *superuser* account is the default administrative account on the WEM. This account works similar to the root account on a UNIX machine. A *superuser* administrator would have to create accounts for the individual users in the WEM - like a UNIX machine root user does. The user accounts would then be given to the non-superuser users. The *superuser* password should be kept private to limit access.

 **Important:** The first time you log into the superuser account, you will be prompted to change your password. See *ANSI T1.276 Compliance* in the *Web Element Manager Overview* for more information about password usage.

User Interface

Upon first logging in to the WEM, a dialog appears that functions as the starting point for all FCAPS operations. This dialog is referred to as the Topology Window and is shown in the following figure. It is important to note that during login, the administrative user has the ability to select the desired language used in the Topology Window. U.S. English and Korean are currently supported.

Figure 2. The Web Element Manager Topology Window










From the Topology Window, the systems to be managed can be specified and added to Topographical Maps. Once specified, managed devices can be selected from either the Object Tree or the Topographical Map to provide real-time status information for the system.

System hardware descriptions and state information can be displayed by double-clicking on a managed device. This provides front and rear views of the chassis. Simply hovering the mouse pointer over an interface or an LED displays its status.

Management Toolbar

The Management Toolbar, which can be enabled or disabled from the **View** menu, provides shortcuts to access various functions available via the Pull-down Menu. Shortcuts include:

Icon	Icon Function	Description
	Fault Management	Clicking this icon opens the Current Event Log for the selected managed device.

Icon	Icon Function	Description
	Web Element Manager User Administration	Clicking this icon enables the User Administration function, located under the Security pull-down menu. This function is used to configure and manage users of the WEM application.
	Save Web Element Manager Configuration	Clicking this icons saves all WEM configuration information, such as Topology Map changes, Object Tree edits, etc. Important: This operation only saves WEM application configuration items. It does not save any configuration text file operations that are made on a selected system.
	Pause Audio Alarm	Clicking this icon temporarily pauses any audible indications that are generated through the system's internal speaker when a pre-configured fault/trap is received by the WEM server. Important: This icon is only available when audio alarms are enabled through the Alarm Management pull-down menu.
	Resume Audio Alarm	Clicking this icon, available only when audio alarm processing has been paused (see above), will cause the system to once again begin generating audible alarm indications. Important: This icon is only available when audio alarms are enabled through the Alarm Management pull-down menu.
	Stop Audio Alarm	Clicking this icon disables the audible alarm function. Important: The audible alarm function described here has no effect on audible alarms generated by the chassis itself, through its SMC and SPIO cards. This function is only applicable to the WEM client; and is configurable on a per chassis basis.
	Performance Statistics	Clicking this icon moves user to Performance Statistics graphing tool window for bulk statistics. From this window, users can select various cards or protocols to monitor, configure the statistics to graph, and type of graph to display collected information in, based on historical information collected through Bulk Statistics collection.
	About Information	Clicking this icon displays uses information related to the WEM application. This includes version number, software build dates, and other important information that may be required when requesting support on this application.

Pull-Down Menu Bar

The pull-down menu bar provides menu-driven user access to all available management operations. These include both WEM application management and configuration operations. This section provides a brief description for each of the application's menus.

File Pull-Down Menu

The **File** pull-down menu option allows users to either log out of a current session, save any configuration changes, or exit the WEM application completely.

Client Pull-Down Menu

The **Client** pull-down allows users to control and customize how the management application and selected devices are viewed on their browser-based client. These settings are configured on a per-user basis. Additionally, this menu provides options for launching other tools that can be used for management purposes such as Telnet and/or Secure Shell (SSH) clients and Management Information Base (MIB) browsers.

System Info Pull-Down Menu

The **System Info** pull-down menu allows you to view system-level information for devices selected in the topology window. From this menu, you also can perform some configuration and system administration operations.

Alarm Management Pull-Down Menu

The **Alarm Management** pull-down menu allows users to manage current, pending, and outstanding events as well as view statistics for alarms. This menu also provides controls for configuring the system Central Office (CO) alarm indicators and audio indicators.

Configuration Pull-Down Menu

The **Configuration** pull-down menu allows administrators to perform various configuration options upon a selected system. This includes system-level parameters such as those for hardware as well as all context-level parameters such as services, interfaces, and protocols. Also included in this menu are the options for specifying the systems to be managed by the WEM.

Performance Pull-Down Menu

The **Performance** pull-down menu allows users to view, configure, modify, collect, and view real-time statistical information for a selected device.

Monitor/Test Pull-Down Menu

The **Monitor/Test** menu offers selections that enable the user to view and configure parameters to monitor and test selected functions such as:

- **EMS Process Monitoring:** This option allows you to view system and disk usage, and interface information about the WEM server application. You can also configure various threshold settings that will create an alarm when the system exceeds your configured thresholds.
- **Monitor Protocol:** This option enables a powerful monitoring tool that can be configured to collect and display specific protocol information for calls coming into or out of the selected system. This powerful tool can be used to help troubleshoot session or connectivity problems.
- **Monitor Subscriber:** This option provides the same powerful monitoring options as explained above, but can be used for a specific subscriber.
- **Port Monitoring** This option allows the users to view, enable/disable the process, and configure the parameter thresholds and intervals for line cards and ports.

The **Test** option allows users to perform tests such as RADIUS server connectivity, PPP echo tests, or AAA packet transmit and receive.

Security Pull-Down Menu

The **Security** pull-down menu provides administrative users with user management functions such as adding and deleting administrative users, monitoring user sessions, and viewing audit trail information.

Help Pull-Down Menu

General help is accessed through the **Help** pull-down menu, located at the top of the menu bar. Click **Contents** to access the main Help screen. It is important to note that context-sensitive help is available for each dialog that possesses a **Help** button. More information on using the online help is available in the *Obtaining Help within the WEM* section later in this chapter.

Object Tree

The object tree presents a hierarchical view of all managed devices, and groups of devices, available to a particular user. This view is based on specifically configured user access rights and may only show a subset of the overall managed network. Management domains identify a group of managed network elements with devices being added to or removed from the object tree by using the **Map** function.

The Object Tree is navigated much like folders and sub-folders are when using the familiar Microsoft® Windows Explorer™ application. WEM users can view either users or management domains from the Object Tree.

Navigation Buttons and Navigation Bars

Navigation buttons and bars are used to change the way that the Topology window is displayed.

Topology Window Information Dialog Box

This portion of the Topology Window provides information about what is being displayed on the Topology Window. The information displayed here will depend on what the administrative user has selected from either the Object Tree or the Topographical Map.

If an administrative user has selected (highlighted) the user information section of the Object Tree, they will view all users logged into the WEM application. If a user has selected a management domain from the Object Tree, they will view information about all devices contained under that domain.

If a user has selected a specific device underneath a management domain, they will view information about the configured contexts within that device. When viewing a domain, users can highlight specific contexts and select them to be the default view for other element management operations.

Topographical Map

The Topology Map provides visual view of all managed devices, and groups of devices, available to a particular user. This view is based on specifically configured user access rights and may only show a subset of the overall managed network.

New topology maps can be added by using the Add function, available from the **Map** pull-down menu. Network devices can be added to an existing topographical map by using the Modify function, available from the **Map** pull-down menu.

Managed network devices are visually represented by device icons that display its manageable state. Device icons with a blue-colored “X” through them denote that the device is reachable, meaning that an administrative user can view the device, but cannot perform any management operations. Device icons with a red-colored “X” through them denote that the device is unreachable, meaning that an administrative user cannot view the device or perform any management operations. Other options can be viewed by right-clicking on the device icon.

System Message Dialog

This area provides system messages from the WEM application to the user. These messages notify the user as to what the application is currently doing. For example, when a user selects a new device from the Topographical Map or Object Tree, the system sends a message to the user that it is attempting to “*Attempting to Fetch Contexts*” for the selected device.

Command History and Dialog Box

This dialog screen area provides a history of command dialog messages for the current session. These messages are received from the managed device upon completion of command execution. This area displays the result of the last command executed.

In addition to command history, this area also provides other key messages reports by the management application.

Chassis Alarm Indicator

This area, when populated, indicates that audible CO alarms are enabled for the managed chassis.

Number of Managed Devices

This area lists the number of managed devices within the currently selected view. The System Message Dialog Area, located on the lower left corner of the topology window, provides more detailed information about each of the devices.

Communication Status Indicator


This indicator shows the status of the communication link between the WEM server and the managed device. The indicator will be one of two colors:

- **Green:** Indicates that a communications link between the WEM server and the client is established and functioning in an idle state
- **Red:** Indicating that the WEM server is busy or a communications problem may be present. During normal operations, the indicator may flash red momentarily, as this indicates that the server is obtaining information from its managed devices (e.g. obtaining a list of contexts from a device or group of devices when a user selects it from the map), but it should return to green in less than 30 seconds.

If the indicator remains red for more than 60 seconds (when using a LAN connection from the client), this indicates that a communications problem is present. Such conditions should be reported and investigated.

Obtaining WEM Help

The WEM's Help system provides users with both context-sensitive Help, used to learn about a specific function, and general Help in which users learn about using the application itself and its associated functions.

 **Important:** This help file is a general purpose file. Accordingly, not all Product features/functionality described in this file are necessarily included in the particular Product version you may be using, or there may be features/functionality contained in a Product version that may not be included in this help file.

Obtaining Help within WEM

General Help is accessed through the **Help** pull-down menu, located at the top of the menu bar. Click the **Contents** option from this menu to access the help system's welcome screen.

Standard Internet browser users should have a frame on the left side of their browser, displaying Contents, Index, and Search tabs. Following are explanations of each tab's purpose.

- **Contents:** The Contents tab provides a “table of contents” for the Help system. Like a printed book, subjects are organized into various sections. To open a particular section, click on the “+” sign to the left of the book icon for that section. When opened, each section will display the various Help topics associated with that section. When a user selects an option, such as a hyperlink or other option from a Help screen, the Contents section will automatically highlight the individual section and topic.
- **Index:** The Index tab is exactly like the index in any document, in that it allows the user to view various entries in alphabetical order. The advantage of a web-based index is that the user may also use the Index function to search for all instances of indexed keywords. When a user enters a search word, the user is moved to the matching area of the index. If there is more than one link available for that indexed keyword, the system will display a pop-up window wherein the user can select the option they want to display.
- **Search:** The Search tab allows the user to perform searches for a specific word or phrase across the entire Help system.

To remove the left-most frame from the display, click the **Hide** button, located at the upper right corner of the main window. To enable the frame, click the **Show** button. These buttons work as a toggle, wherein one or the other appears, as dictated by the status of the help system tab views.

Other browser-based navigation features, such as back and forward, print, and others work as usual.

Accessing Context-Sensitive Help

Context-sensitive help is displayed when a user clicks the **Help** button displayed on an operations screen.

This type of help is displayed in a secondary window that does not show the various tabs available in general help. Each context-sensitive help topic provides basic navigation (scroll up/down/left/right) and print functions as needed, but has no other options.

After a user has reviewed the context-sensitive help topic, they can close the secondary window by clicking anywhere within the help system.

Accessing Offline Help

Offline help can be accessed or downloaded without logging in to the WEM GUI. Navigate to the WEM page using your browser and click the “**Web Element Manager Offline Help**” link under the **Help Resources** section to download the WEM help in .CHM file format.


Chapter 9


Upgrading the WEM Software

The information and instructions in this chapter should be used to upgrade a WEM installation. These instructions assume that you have already obtained the upgrade file(s) and have stored them on the server running the WEM application.

Two upgrade types are currently supported:

- **Automated:** Once executed, the WEM installation file detects previously installed versions of the application. If an older version is present, you are prompted as to whether or not you would like to perform an upgrade.
Because this process preserves all application database information from the currently installed version, it is only supported for n-2 releases, where n is the new version being installed. For example, the automated process can be used to upgrade either the 4.5.x or 5.0.x releases to version 5.1.x.
- **Manual:** This type involves uninstalling any existing instances of the application and installing the new version.
This type **must** be used if the current instance is more than two releases older than the new version being installed. For example, the manual upgrade type must be used if 3.5.x is currently installed and you would like to upgrade to 5.1.x.

 **Caution:** Please contact your local support representative to ensure compatibility prior to upgrading.

 **Important:** The WEM application does not provide an automated mechanism for performing software “downgrades” (reverting to an older software version from a newer one). However, the instructions provided in the [Performing a Manual Upgrade](#) section of this chapter can be used since that procedure requires you to uninstall the existing version and install the alternate. Information is also provided for migrating database information.

This chapter includes the following topics:

- [Unpacking the Installation Files](#)
- [Performing an Automated Upgrade](#)
- [Performing a Manual Upgrade](#)
- [Reconfiguration of Bulkstat Schemas](#)
- [Preserving Database Information](#)

Unpacking the Installation Files

WEM installation files are distributed as a single compressed file with a “.tar.gz” extension.

Once the installation file has been copied to the server, use the following procedure to unpack the file:

Step 1 Go to the directory in which the file is stored.

Step 2 Unzip the file by entering the following command:

```
gunzip file_name.tar.gz
```

file_name is the name of the WEM application installation file.

Step 3 Un-tar the file by entering the following command:

```
tar -xvf file_name.tar
```

Decompressing the installation file results in the following files:

- **setup.bin**: The installation binary file.
- **inst**: The executable file used to initiate the installation. This file is used for both the console- and the GUI-based methods.
- **uninst**: Once the WEM application has been installed, this file must be copied to the */<ems_dir>/_uninst/* directory. It is the executable file for uninstalling the application for both the console- and GUI-based methods.
- *file_name.tar*: A compressed file containing all of the application files required for both the script- and GUI-based installation methods.
- **README**: A text file containing information pertaining to the release.

Step 4 Proceed to either the [Performing an Automated Upgrade](#) or [Performing a Manual Upgrade](#) section of this chapter.

Performing an Automated Upgrade

This section provides information and instructions for performing an automated upgrade as described previously in this chapter.

Determining the Best Upgrade Method

The WEM, and its ancillary components such as the Apache web server and PostgreSQL database engine, may be installed using one of following methods.

- **GUI-based method:** This method is the most often used installation procedure. Requirements for using this method include:
 - Logon account to the WEM server with display terminal (monitor) attached and some X-Windows client installed on server.
 - Network connectivity to WEM server via Telnet or SSH, using some X-Windows client on remote workstation.
- **Console-based method:** This method is available to users who do not have an X-Windows client available for remote network connectivity to the WEM server via Telnet or SSH.

It is important to note that the upgrade method is independent of the method used for installation. For example, if the console-based method was used for installation, either the GUI- or console-based method can be used to perform the upgrade.

Depending on the desired installation method, proceed to either the [Upgrading the WEM Software using the Console-Based Installation Method](#) or [Upgrading the WEM Software using the GUI-Based Installation Wizard](#) section of this chapter.

Upgrading the WEM Software using the GUI-Based Installation Wizard

Follow the instructions below to upgrade the WEM using the GUI-based wizard.

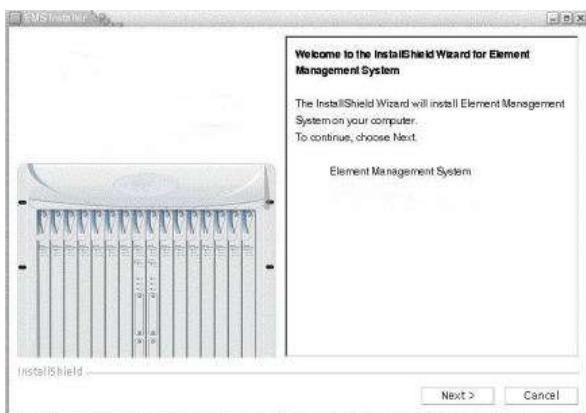
Step 1 Go to the directory in which the WEM upgrade files are located.

Step 2 Execute the setup file by entering the following command:

```
./inst
```

The following WEM Installer dialog appears:

■ Performing an Automated Upgrade



- Step 3** Click the **Next** button. The system automatically checks for an installed version of the application. If a version is installed, the following dialog appears.



- Step 4** Click **Yes** to proceed.

- Step 5** Follow the on-screen prompts to progress through the various installation dialogs and configure the parameters as required. Refer to the *WEM Installation Parameter Descriptions* table for descriptions of the configurable parameters on each of the installation dialogs.

Once you have completed the upgrade and all processes have started, a confirmation dialog box appears reporting that the installation was successful.

- Step 6** Click the **Finish** button to exit the GUI-based installation wizard.

- Step 7** Verify that all WEM processes were successfully started by looking at the on-screen messages in the console window. The following provides a sample of the messages:

```
Starting EMS Server...
```

```
EMS Server started.
```

```
PID: 1370
```

```
Logfile generated as:
```

```
./log/SERVER_LOG_20051220_142931/SERVER_LOG
```

```
Please check file /<ems_dir>/server/log/.server.log for additional debug messages
```

```

Starting Script Server...

Script Server started.

PID: 1389

Logfile generated as:

./log/SCRIPT_LOG_20051220_142937/SCRIPT_LOG

```

The following table lists the processes that are started at installation:

Process	Log File
EMS Server	.server.log
Script Server	.scriptserver.log
BulkStat Server	.bulkstatserver.log
BulkStat Parser Server	.bulkstatparser.log
Monitor Server (if enabled)	.watchdog.log
NorthBound Server	.northboundserver.log
Notification Service	.notifyservicescript.log



Important: The NorthBound Server and Notification Service processes are customer-specific and are not operational without the appropriate license. Please contact your local sales representative for additional information.

All log files are stored in the `/<ems_dir>/server/log` directory by default. Refer to the log files for additional information in the event that one or more of the processes did not start properly.

Step 8 Copy the uninstallation script to the `_uninst` directory created during the installation process (`/<ems_dir>/_uninst` by default) by entering the following command:

```
cp uninst /<ems_dir>/_uninst/
```

Step 9 Copy the files pertaining to the migrate script to the scripts directory created during the installation process (`/<ems_dir>/server/scripts` by default) by entering the following command:

```
cp migrate.tar.gz /<ems_dir>/server/scripts/migrate.tar.gz

cp README_MIGRATE /<ems_dir>/server/scripts/README_MIGRATE
```

Upgrading the WEM Software using the Console-Based Installation Method

Follow the instructions below to upgrade the WEM using the console-based installation script.

Step 1 Go to the directory in which the WEM upgrade files are located.

Step 2 Execute the setup file by entering the following command:

```
./inst -console
```

A message appears welcoming you to the WEM installation.

Step 3 Enter “1” to proceed to the *EMS Upgrade Check* configuration prompts. The system automatically checks for installed version of the application. If a version is installed, a message appears asking if you would like to upgrade the current installation.

Step 4 Enter “1” to proceed.

Step 5 Follow the on-screen prompts to proceed through the upgrade and configure the various parameters as required. Refer to the *WEM Installation Parameter Descriptions* table for descriptions of the configurable parameters within each of the sections of the script.

Once you have completed the upgrade and all processes have started, you receive a message indicating that the WEM was successfully installed.

Step 6 Enter “3” to complete the installation.

Step 7 Verify that all WEM processes were successfully started by looking at the on-screen messages in the console window. The following provides a sample of the messages:

```
Starting EMS Server...
```

```
EMS Server started.
```

```
PID: 1370
```

```
Logfile generated as:
```

```
./log/SERVER_LOG_20051220_142931/SERVER_LOG
```

```
Please check file /<ems_dir>/server/log/.server.log for additional debug
messages
```

```
Starting Script Server...
```

```
Script Server started.
```

```
PID: 1389
```

```
Logfile generated as:
```

```
./log/SCRIPT_LOG_20051220_142937/SCRIPT_LOG
```

The following table lists the processes that are started at installation:

Process	Log File
EMS Server	.server.log
Script Server	.scriptserver.log
BulkStat Server	.bulkstatsserver.log

Process	Log File
BulkStat Parser Server	.bulkstatparser.log
Monitor Server (if enabled)	.watchdog.log
NorthBound Server	.northboundserver.log
Notification Service	.notifyservicescript.log



Important: The NorthBound Server and Notification Service processes are customer-specific and are not operational without the appropriate license. Please contact your local sales representative for additional information.

All log files are stored in the `/<ems_dir>/server/log` directory by default. Refer to log files for additional information in the event that one or more of the processes did not start properly.

Step 8 Copy the un-installation script to the `_uninst` directory created during the installation process (`/<ems_dir>/_uninst` by default) by entering the following command:


```
cp uninst /<ems_dir>/_uninst/
```

Step 9 Copy the files pertaining to the migrate script to the scripts directory created during the installation process (`/<ems_dir>/server/scripts` by default) by entering the following command:

```
cp migrate.tar.gz /<ems_dir>/server/scripts/migrate.tar.gz
cp README_MIGRATE /<ems_dir>/server/scripts/README_MIGRATE
```

Performing a Manual Upgrade

Follow the instructions in this section to perform a manual upgrade as described previously in this chapter. These instructions assume that a version of the application is currently installed and that it was installed in the default directory, /users/ems.

 **Important:** The instructions in this section can also be used to perform a software downgrade of the WEM if required.

- Step 1** Log into the WEM server as the user *root*.
- Step 2** *Optional.* If you wish to preserve database information for the currently installed version, follow the instructions in the [Performing a Database Back-Up using the backup Script](#) section of this chapter and then proceed to *Step 3* of this procedure.
- Step 3** Uninstall the WEM using the instructions provided in the *Uninstalling The WEM* chapter of this guide and proceed to *Step 4* of this procedure.
- Step 4** Install the desired version of the WEM using the instructions provided in the *Installing the WEM Software* chapter of this guide and proceed to *Step 5* of this procedure.
- Step 5** *Optional.* If database information was backed-up per *Step 2* of this procedure, restore the data using the instructions in the [Performing a Database Restoration using the backup Script](#) section of this chapter and proceed to *Step 6* of this procedure.
- Step 6** Start WEM Server processes using the instructions in the *Step 3: Start WEM Server Application* section of *WEM Server Files and Operation* chapter of this guide.

Reconfiguration of Bulkstat Schemas

Once the WEM software upgrade is completed successfully, you are required to configure the schemas. This process involves two steps:

- Deletion of the already configured schema
- Reconfiguration of schemas

Deletion of Already Configured Schema

For deleting the already configured schemas, follow the instructions below:

- Step 1** Login to the WEM application.
- Step 2** In the main menu, go to **Accounting > Bulk Statistics Configuration**. The Bulk Statistics dialog box opens.
- Step 3** Click the **Configure** button to launch the Bulk Statistics Configuration dialog box.
- Step 4** In the Schema tab, select all the configured schemas by clicking any row and then pressing **Ctrl+A**.
- Step 5** After selecting all the configured schemas, click the **Delete** icon. Warning message displays.
- Step 6** Click **Yes** to delete the selected schemas and click the **Apply** button. Another warning message displays.
- Step 7** Click **No** to ignore the warning. The successful configuration message displays.
- Step 8** Click **OK** to finish.

Reconfiguration of Schemas

For reconfiguration of schemas, follow the instructions below:

- Step 1** Login to the WEM application.
- Step 2** In the main menu, go to **Accounting > Bulk Statistics Configuration**. The Bulk Statistics dialog box opens.
- Step 3** Click the **Configure** button to launch the Bulk Statistics Configuration dialog box.
- Step 4** Select the schemas to be configured under the **Schema** tab and click the **Add** icon.
- Step 5** Click the **Apply** button to configure the selected schemas. You may get a warning message “You have selected some obsolete and/or WEM unsupported counters. Unsupported counters will not be parsed by WEM. Do you want to continue?”
- Step 6** Click **Yes** to close the warning. The successful configuration message displays.

■ Reconfiguration of Bulkstat Schemas

Step 7 Click **OK** to finish configuring schemas.


Preserving Database Information

Database preservation is done using the *backup.sh* script located in the *<ems_dir>/server/scripts* directory by default. This script is used to perform both database back-ups and restorations.

Information and instructions for using this script are provided in this section.

Performing a Database Back-Up using the Backup Script

Follow the instructions in this section to back-up database information prior to upgrading or downgrading WEM software.

 **Important:** The instructions provided in this section are intended for use with those located in the [Performing a Manual Upgrade](#) section of this chapter.

Step 1 Move to the directory in which the backup script is located by entering the following command:

```
cd /<ems_dir>/server/scripts
```

Step 2 Perform the database back-up by entering the following command:


```
./backup.sh
```

This script automatically stops all WEM processes and takes the backup of the WEM database using *pg_dumpall* command. You are notified once the back-up is complete.

Step 3 Return to *Step 3* of the procedure in the [Performing a Manual Upgrade](#) section of this chapter.

Performing a Database Restoration using the Backup Script

Follow the instructions in this section to restore database information after performing a WEM software upgrade or downgrade.

 **Important:** The instructions provided in this section are intended for use with those located in the [Performing a Manual Upgrade](#) section of this chapter.

Step 1 Move to the directory in which the backup script is located by entering the following command:

```
cd /<ems_dir>/server/scripts
```

Step 2 Perform the database restoration by entering the following command:

```
./backup.sh restore
```

■ Preserving Database Information

This script automatically stops all WEM processes and performs the database restoration. You are notified once the database restoration is complete.

Step 3 Return to *Step 6* of the procedure in the [Performing a Manual Upgrade](#) section of this chapter.

Chapter 10

Uninstalling The WEM

This chapter provides the step-by-step procedure of uninstalling WEM application using the GUI-based installation wizard and the console-based installation. Additionally it provides instructions for backing up all the critical files before starting the WEM uninstallation.

This chapter includes the following topics:

- [Understanding the Uninstall Process](#)
- [Determining the Best Uninstallation Method](#)
- [Using the GUI-based Uninstall Method](#)
- [Using the Console-based Uninstall Method](#)

Understanding the Uninstall Process

Upgrading the Web Element software on the server requires that the currently installed version be uninstalled from the server before the newer version can be installed.

Failure to do so will prevent your ability to install the new WEM version. Following is an overview of this process.

Step 1 - Make Backup Copies of All Critical Files

This step requires that you archive, at a minimum, the following files.

- All data files, typically located in the `/<ems_dir>/server/data` directory and all subdirectories residing there (i.e. `/bulkstats`, etc.).
- PostgreSQL data files, located in the `~postgres/data` or `users/postgresx.x.x/data` directory. Refer to the *Backing-up WEM Databases* section of the *WEM Database Maintenance* chapter in this guide for more information.



Important: Downgrading the WEM application to an earlier version is not supported at this time. You must uninstall the current version and install the older version using the instructions located in *Installing the WEM Software* chapter of this guide. Please contact your local sales representative for information on preserving data stored by the current WEM instance prior to uninstalling.

Step 2 - Uninstall WEM Application

The process used to perform this uninstall is dependent upon the method used to install the version currently running. See the section below for information on how to determine which installation method was used previously.

Whichever uninstall method is used, it is always preferable to install the new version of the application using the GUI-based installation method.

Determining the Best Uninstallation Method


The WEM, and its ancillary components such as the Apache web server and PostgreSQL database engine, may be uninstalled using one of two methods.

- **GUI-based method:** This method is the most often used uninstallation procedure. Requirements for using this method include:
 - Logon account to the WEM server with display terminal (monitor) attached and some X-Windows client installed on server.
 - Network connectivity to WEM server via Telnet or SSH, using some X-Windows client on remote workstation.
- **Console-based method:** This method is available to users who do not have an X-Windows client available for remote network connectivity to the WEM server via Telnet or SSH.

It is important to note that the uninstallation method is independent of the method used for installation. For example, if the console-based method was used for installation, either the GUI- or console-based method can be used to uninstall the program.

Using the GUI-based Uninstall Method

This section provides instructions for uninstalling the WEM application using the GUI-method.

 **Important:** The GUI-based uninstall script is designed to protect all the historical data files that are currently in use. However, it is still recommended that you manually perform a backup of these files before proceeding with this procedure.

- Step 1** Log into the server on which the WEM application is installed. Use the root username and password.
- Step 2** Go to the directory in which WEM is installed (the `/users/ems` directory by default) by entering the following command:

```
cd /<ems_dir>
```

- Step 3** Go to the `/_uninst` sub-directory by entering the following command:

```
cd _uninst
```

- Step 4** Execute the uninstall script by entering the following command:

```
./uninst
```

A dialog box appears welcoming you to the WEM uninstallation wizard.

- Step 5** Click the **Next** button. A dialog appears identifying the processes to be stopped.


- Step 6** Click **Next** and follow the on-screen instructions.

- Step 7** Click **Finish** to complete the uninstallation process.

The uninstall script leaves the `/ems` directory in place with several sub-directories.


- Step 8** *Optional:* If all critical and historical data files have been properly backed up, delete the `/ems` directory using the following commands:

```
cd ..  
cd ..  
rm -R ems
```

 **Important:** If it is decided to keep the `/ems` directory, it is highly recommended that at the very least you delete the `_uninst` directory. Failure to remove this directory before installing a new version of the WEM application using the GUI-based installation method will result in a different `_uninst` directory being created each time you perform a software upgrade. This results in the creation of multiple uninstall directories (i.e. named `/_uninst2`, `/_uninst3`, etc.). The `uninst` file needed for the next uninstall would have to be located there.

Using the Console-based Uninstall Method

This section provides instructions for uninstalling the WEM application using the console-based method.

 **Important:** The console-based uninstall script is designed to protect all the historical data files that are currently in use. However, it is still recommended that you manually perform a backup of these files before proceeding with this procedure.

- Step 1** Log into the server on which the WEM application is installed. Use the root username and password.
- Step 2** Go to the directory in which WEM is installed (the `/users/ems` directory by default) by entering the following command:

```
cd /<ems_dir>
```

- Step 3** Go to the `_uninst` sub-directory by entering the following command:

```
cd _uninst
```

- Step 4** Execute the uninstall script by entering the following command:

```
./uninst -console
```

A message appears welcoming you to the WEM uninstallation wizard.


- Step 5** Enter “1” to proceed. A message appears listing the application processes to be uninstalled.
- Step 6** Enter “1” to proceed with the uninstallation. A number of messages are displayed indicating the progress.
- Step 7** Enter “3” to complete the uninstallation process.
- Upon completion, the uninstall script indicates that certain sub-directories were not deleted within the `/ems` directory.
- Step 8** *Optional:* If all critical and historical data files have been properly backed up, delete the `/ems` directory using the following commands:

```
cd ..
```

```
cd ..
```

```
rm -R
```

```
ems
```

 **Important:** If it is decided to keep the `/ems` directory, it is highly recommended that at the very least you delete the `_uninst` directory. Failure to remove this directory before installing a new version of the WEM application using the GUI-based installation method will result in a different `_uninst` directory being created each time you perform a software upgrade. This results in the creation of multiple uninstall directories (i.e. named `_uninst2`, `_uninst3`, etc.). The `uninst` file needed for the next uninstall would have to be located there.

Appendix A

Troubleshooting the WEM

This appendix provides information on troubleshooting the following:

- [Issues Pertaining to Installation](#)
- [Issues Related to the Starting of the WEM](#)
- [Issues Related to Login](#)
- [Issues Related to the Web Browser](#)
- [Issues Pertaining to CORBA Communication](#)
- [Issues Related to Bulkstatistics](#)
- [Issues Pertaining to Configuration Backup](#)
- [Issues Pertaining to Alarms](#)
- [Issues Pertaining to the Process Monitor \(PSMON\)](#)
- [Issues Pertaining to Starting and Stopping EMS Processes](#)
- [Issues Pertaining to Java](#)
- [Issues Pertaining to WEM Upgrade](#)

In addition to the above, instructions are also provided for capturing client and server logs. These are provided in the [Capturing WEM Client Logs](#) and [Capturing WEM Server Logs using Script](#) sections of this appendix.

Issues Pertaining to Installation

Problem:	Installer window doesn't appear.
Possible Cause(s):	<ul style="list-style-type: none"> • If you received the “<i>ERROR: could not initialize interface awt - exception: java.lang.InternalError: Cannot connect to X11 window server using ':0.0' as the value of the DISPLAY variable.</i>” message, the display settings of your terminal program may be incorrect, or Exceed is not running on the client machine. • The <i>/tmp</i> directory may be full.
Action(s):	<ul style="list-style-type: none"> • Verify the display settings of the terminal application on the client machine are correct. • Verify that Exceed is installed properly on the client machine. • Determine the status of the <i>/var/tmp</i> directory by entering the df -k command. If it is at or near capacity, choose another directory for the <i>Host Base Directory</i> parameter setting. This parameter can be set via the installation process.

Problem:	Received “ <i>Unable to install Element Management System <version> over Element Management System: Installed product has newer version.</i> ” message when attempting installation.
Possible Cause(s):	<ul style="list-style-type: none"> • A later version of the WEM is already installed. • A previously installed version of the WEM was not completely uninstalled, or was uninstalled incorrectly.
Action(s):	<ul style="list-style-type: none"> • Completely uninstall the newer version and install the desired version. • Determine if WEM packages exist in the <i>/var/sadm/pkg</i> directory. These packages begin with “EMS”. If packages exist, remove them by entering the pkgrm -n EMS* command. Once they’ve been removed, reinstall the application.

Problem:	WEM components did not start successfully upon installation.
Possible Cause(s):	A previously installed version of the WEM was not completely uninstalled, or was uninstalled incorrectly.
Action(s):	<ul style="list-style-type: none"> • Check the installation log files (located in the directory) and EMS process log files (located in the <i><ems_dir>/server/log</i> directory). • Enter the ps -ef grep server command to determine if any process instances from previous installations are running. If so, stop them using the instructions in the <i>WEM Server Files and Operation</i> chapter of this guide. Once stopped, start the processes for the current installation using the instructions in the same appendix.

Issues Related to the Starting of the WEM

Problem:	WEM server doesn't start.
Possible Cause(s):	<ul style="list-style-type: none"> The PostgreSQL database is not running. The <i>log</i> directory may have been accidentally deleted. Processes from a previous WEM are still running. The “<i>ServerPort</i>” and/or “<i>ServerIIOPPort</i>” port values configured for the WEM are in use by other processes. The physical IP address of the WEM server might have been changed without modifying other related WEM configuration appropriately.
Action(s):	<ul style="list-style-type: none"> Verify that the Postgres database is running by entering the ps -ef grep post command. If is not, follow the instructions in <i>WEM Server Files and Operation</i> chapter of this guide to start it. Determine if the log directory exists in <i><ems_dir>/server</i> (default directory) using the ls command to display the contents of the directory. If it is missing, create it using the mkdir command and stop and restart all WEM processes using the instructions in <i>WEM Server Files and Operation</i> chapter of this guide. Enter the ps -ef egrep “server bulkstatparser bulkstatserver scriptsvr” command to determine if WEM server processes are running and, if they are, what directory did they originate from. If they’re different, stop the processes and restart the server from within the desired installation directory using the instructions in <i>WEM Server Files and Operation</i> chapter of this guide. Determine if the “<i>ServerPort</i>” and/or “<i>ServerIIOPPort</i>” port numbers specified in the <i>nms.cfg</i> file (located in the <i><ems_dir>/server/etc</i> directory by default) are already in use. The default “<i>ServerPort</i>” is 22222, and the default “<i>ServerIIOPPort</i>” is 15000. This can be determined by entering the netstat -a command which displays a list of all the process addresses and ports in use in “<i>ipaddress.port</i>” format. If they are in use, either stop the other processes or configure new values for these parameters. If the WEM server IP address has been changed, the appropriate modifications need to be made in the <i>nms.cfg</i> and <i>/etc/hosts</i> files, as per the WEM IP Address Change Procedure .

Problem:	Postgres doesn't start.
Possible Cause(s):	<ul style="list-style-type: none"> A <i>.s.PGSQL.5432.lock</i> lock file is present in the <i>/tmp</i> directory prior to starting postgres. Shared resources are not released after another Postgres instance was terminated. The PostgreSQL system environment variables were not configured properly prior to installation.
Action(s):	<ul style="list-style-type: none"> If the lock file is present, delete it using the rm .s.PGSQL.5432.lock command. Determine if a previous Postgres instance is still using system resources by entering the ipcs command. If it is, clear the resources by entering the ipcrm command. Ensure that the PostgreSQL system environment variables were configured properly using the information in <i>Installing the WEM Software</i> chapter of this guide.

■ Issues Related to the Starting of the WEM

Problem:	Received the following error message in postgres log: “2008-09-13 15:57:31 IST bsdb ERROR: column "data_touseravg_bps" does not exist at character 4332008-09-13 15:57:31 IST bsdb STATEMENT: SELECT "sampledate", "samptime", "vpname", "vpnid", "apn", "acc_req_sent", ... FROM apn_current WHERE ("boxername"='bngnc22') AND ((("sampledate"='2008-09-13') AND ("samptime">='33900')) ... ORDER BY "sampledate", "samptime", "vpname", ...; ” NOTE: The table name in the above message is after the 'FROM' keyword.
Possible Cause(s):	The mentioned table in error logs may not be in sync with the old table. There are two tables for each bulkstat subsystem in database: old and current (for example, card and card_current, port and port_current, etc.).
Action(s):	There is one workaround for this but there will be data loss for that mentioned counter. Manually drop the column from table to make the tables in sync. There is data loss only for that particular column. After this, restart all the bulkstat processes (<i>bulkstatparser</i> and <i>bulkstatserver</i>). After restarting, <i>bulkstatparser</i> will re-add that column in both the tables and data will be populated for that column.

Problem:	Received the following error message in postgres log: “ERROR: trigger "xxxxxxxxxxxxxxxxxxxx" for table "yyyyyyyyyyyy" does not exist ERROR: function ffffffffffffffffff() does not exist ERROR: view "vvvvvvvvvvvvvvvvvvvv" does not exist”
Possible Cause(s):	Error messages regarding function, trigger and view are logged in logfile when the DROP statement is executed while initializing the EMS databases. SQL file used for initializing the database contains a sequence of DROP and CREATE statements for every function, trigger and view. These messages do not have any impact on postgres as well as WEM functionality.
Action(s):	No action required. This is a normal behavior.

Issues Related to Login

Problem:	Could not login to WEM.
Possible Cause(s):	Invalid user name or password.
Action(s):	Verify that the username and password you are entering is correct.

Problem:	Received “ <i>Could not connect to server, destroying applet</i> ” message.
Possible Cause(s):	<ul style="list-style-type: none"> • WEM Server is not running. • Missing Interoperable Object Reference (IOR) files. • A firewall is prohibiting communication between the client and the server. • The user could have been locked out due to multiple failed login attempts.
Action(s):	<ul style="list-style-type: none"> • Verify that server processes are running using the information in <i>WEM Server Files and Operation</i> chapter of this guide. • Verify that IOR files are present; they are stored in the <code><ems_dir>/client/<ems-version-number>/ior</code> directory by default. A number of files ending in <code>.ior</code> should be present. These files pertain to various functions supported by the WEM. • Edit the <code>img.html</code> file (located in the <code><ems_dir>/client</code> directory (by default) to use fixed ports and open the required ports in the firewall. This requires the configuration of the “FIXED_PORT”, “FIXED_PORT_RANGE_START” and “FIXED_PORT_RANGE_END”. • Verify that all the ports between FIXED_PORT_RANGE_START and FIXED_PORT_RANGE_END (both inclusive) are open on the firewall. If they are not, they should be opened. • If the user is “<i>superuser</i>”, the <code>set_superuser_password</code> script can be used to reset the “<i>superuser</i>” password to the default. If the user is not “<i>superuser</i>” then the administrator needs to be contacted to reset the user’s password.

Problem:	Received “ <i>Java policy file is outdated or missing</i> ” message.
Possible Cause(s):	The <code>java.policy</code> file is either missing from the user’s home directory on the client machine or it has expired.
Action(s):	<ul style="list-style-type: none"> • Verify that the .java.policy file is present in your home directory. Refer to <i>Preparing and Using the Client Workstation</i> chapter of this guide for more information. • Copy the <code>java.policy</code> file from the “<i>Java Policy File</i>” link provided in <code>img.html</code> file to your home directory. Ensure that no extension (i.e., <code>.txt</code>) is appended to the file. <p>NOTE: All instances of the browser must be closed and restarted after the policy file has been updated.</p>

Problem:	Received “ <i>Server could not establish connection with client, therefore notifications will not work.</i> ” message.
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■ Issues Related to Login

Possible Cause(s):	<ul style="list-style-type: none"> • A firewall is prohibiting communication between the client and the server. • The Hosts file does not have an entry for the client PC's hostname and corresponding physical IP address.
Action(s):	<ul style="list-style-type: none"> • Edit the <i>img.html</i> file (located in the <i><ems_dir>/client</i> directory (by default) to use fix ports and open the required ports in the firewall. This requires the configuration of the “FIXED_PORT”, “FIXED_PORT_RANGE_START” and “FIXED_PORT_RANGE_END”. • Verify that all the ports between FIXED_PORT_RANGE_START and FIXED_PORT_RANGE_END (both inclusive) are open on the firewall. If they are not, they should be opened. Edit the Hosts file (located in <i>/etc</i> directory) with the client PC's hostname and corresponding physical IP address.

Problem:	Superuser (any user) account locked.
Possible Cause(s):	The configured number of consecutive failed logins has been reached.
Action(s):	Check the configuration of the no limit ConsecutiveFailLogin parameter in the <i>ua.cfg</i> file (located in the <i><ems_dir>/server/etc</i> directory by default). If users are frequently locked out due to reaching the maximum limit, you may consider increasing the limit, or disabling the functionality. You may also consider reducing the amount of time the account is locked out by modifying the configuration of the no locked out <i>LockOutInterval</i> parameter also contained in the <i>ua.cfg</i> file.

Issues Related to the Web Browser

Problem:	WEM Client cannot be started.
Possible Cause(s):	JRE 1.4.x is installed on the client machine.
Action(s):	JRE 1.4.x is not supported. If it is currently installed on the client machine, uninstall it and install either JRE 1.5 or 1.6.

Problem:	Not able to invoke help
Possible Cause(s):	The browser is configured to block pop-ups.
Action(s):	Configure your browser to allow pop-ups from the WEM server.

Problem:	WEM Client-Server version mismatch message is received.
Possible Cause(s):	Attempting to login into an older version of the WEM after having logged into a newer version of the application.
Action(s):	<p>This is caused by the browser storing the <i>.jar</i> files for the newer version of the WEM client in its cache.</p> <ul style="list-style-type: none"> • For JRE versions greater than 1.5: The Temporary Internet Files group in the General tab of the Java Control Panel should be used to disabled caching. • For JRE versions greater than 1.6: The Temporary Internet Files group in the General tab of the Java Control Panel should be used to disabled caching.

Problem:	After WEM upgrade or installation of a new version, various screens, for example Graph/ Current Alarm View, do not open.
Possible Cause(s):	Check the java console and if you get exceptions like <i>"Exception in thread "AWT-EventQueue-2" java.lang.NoClassDefFoundError"</i> , it could be the case that the browser cache is enabled on your workstation and needs cleanup.
Action(s):	Cleanup the temporary internet cache from your browser and re-invoke the WEM Client.

Issues Pertaining to CORBA Communication

Problem:	IMG is unmanageable.
Possible Cause(s):	<ul style="list-style-type: none"> • The WEM Server cannot communicate with the system due to network issues. • There is an ORBEM client identification mismatch between the chassis and WEM. • The ORBEM client on the chassis is disabled. • There is an IOP port configuration mismatch between the chassis and WEM. • The IOP transport parameter on the chassis is not enabled. The chassis is unmanageable.
Action(s):	<ul style="list-style-type: none"> • Ensure ICMP connectivity between the system and the WEM Server using the ping <code><wem_server_ip_address></code> command from the chassis' command prompt. Refer to the <i>Command Line Interface Reference</i> for more information on using this command. • Verify that the ORBEM client identification on the chassis matches that configured on the WEM. The configuration of this parameter on the chassis can be determined by entering the show configuration grep client command. On the WEM, check for the ASID (Application Server ID), Port, and SSL-enabled flag (IOP/SIOP) on the Modify IMG screen. Change these settings as needed. • Check the status of the ORBEM client on the chassis by executing the show orbem client id <client_id> command on the chassis. The "State" should be "Enabled". If the "State" is "Disabled", execute the activate client id <client_id> command in the ORBEM Configuration Mode and check the status again-- it should now be "Enabled". • Verify that the configuration of the IOP port on the chassis matches that configured for the WEM. The configuration of this parameter on the chassis can be determined by entering the show configuration grep iop-port. On the WEM, check for the ASID (Application Server ID), Port, and SSL-enabled flag (IOP/SIOP) on the Modify IMG screen. Change these settings as needed. Change these settings as needed. • Verify that the IOP transport parameter is enabled on the chassis by entering the show configuration grep iop-transport command. If it is not, enable using the instructions found in the System Administration and Configuration Guide. • Check if the SSL is enabled and/or enforced on the WEM. If the SSL is enabled, disable the IOP transport on the chassis and set the value of IMG Port for the chassis such that it is identical to the SIOP port parameter configured on the chassis.

Problem:	Received "Callbacks between server and client are not working. Screen cannot be invoked." message.
Possible Cause(s):	<ul style="list-style-type: none"> • A firewall is prohibiting communication between the client and the server. • The network connection between the server and client machine might be slow.

<p>Action(s):</p>	<ul style="list-style-type: none"> • Edit the <i>img.html</i> file (located in the <i><ems_dir>/client</i> directory (by default) to use fix ports and open the required ports in the firewall. This requires the configuration of the "FIXED_PORT", "FIXED_PORT_RANGE_START" and "FIXED_PORT_RANGE_END". • Verify that all the ports between FIXED_PORT_RANGE_START and FIXED_PORT_RANGE_END (both inclusive) are open on the firewall. If they are not, they should be opened. • The user can try performing a "ping" or "traceroute" from the server machine for the client's IP address and check for any packet-loss or network delay and contact the network administrator if required.
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Issues Related to Bulkstatistics

Problem:	WEM server not receiving bulkstats files.
Possible Cause(s):	<ul style="list-style-type: none"> • No FTP server is running on the server. • Invalid FTP user password is being used to access the chassis. • No “destination” path for bulkstats files is configured. • Inadequate user privileges for bulkstatistics storage directory. • Solaris operating system patches may need to be updated. • Poor quality connection between chassis and WEM.
Action(s):	<ul style="list-style-type: none"> • Verify that the FTP server process is running on the server by issuing the ps -ef grep in.ftpd command. If it is not, start it. • Check the username and password used to ftp the bulkstats data from the chassis to Web Element Management server. Compare the “<i>FTPUserName</i>” and “<i>FTPPassword</i>” parameters in the <i>nms.cfg</i> file located in the <i><ems_dir>/server/etc</i> directory by default to the names of administrative users with FTP privileges on the chassis. • Verify that the “<i>destination</i>” directory is configured in the <i>bsparser.cfg</i> file located in the <i><ems_dir>/server/etc</i> directory by default. • Verify that the FTP user has permissions to write to the configured storage directory. • Verify that the latest Solaris operating system patches are installed. Refer to <i>WEM Port and Hardware Information</i> chapter of this guide for more information. • Ensure that the configuration the bulk statistics receiver on the managed system Executing the show bulkstats command on the chassis displays this information. The “<i>Remote File Format</i>” field should contain a valid directory on the WEM Server. (Also verify that this directory exists on the server.) The “<i>Bulkstats Receivers</i>” field should contain the IP address of the WEM Server. • Slow connections could affect the data transfer between the chassis and the WEM server. In this case, contact your system administrator.

Problem:	XML files are not getting generated.
Possible Cause(s):	<ul style="list-style-type: none"> • The Bulkstatistics Server component is not running. • Invalid “<i>sample-interval</i>” parameter configuration on the system. • Bulkstatistics functionality was configured through the system’s command line interface rather than through the WEM. • XML file generation is disabled.


Action(s):	<ul style="list-style-type: none"> • Verify that the Bulkstatistic Server process is running by entering the ps -ef grep bulkstatserver command. If it is not, execute the ./serv bulkstatserver start command from within the server directory (<ems_dir>/server by default). • Verify that the “sample-interval” parameter on the system is set to either “1” or “5”. The value can be determined by entering the show bulkstats command on the command line. • Make sure that the bulkstats schema configuration is done through WEM. • Make sure that “XMLDataEnable” parameter in the <i>etc/bsserver.cfg</i> file is set to “1” (enabled). If it is not, change the setting, save the file, and execute the ./serv bulkstatserver start command from within the server directory (<ems_dir>/server by default).
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Problem:	Received “No matching data found” error when fetching bulkstatistics reports.
Possible Cause(s):	<ul style="list-style-type: none"> • The bulkstatistics may not be getting parsed properly. • Invalid filter criteria used for the fetch operation.
Action(s):	<ul style="list-style-type: none"> • Verify that the filter criteria entered is valid. • If you are querying server in another time zone, enter the timing filters according to your time zone only. • Check if the corresponding data is present in the bsdb. • Verify that the “sample-interval” parameter on the system is set to either “1” or “5”. The value can be determined by entering the show bulkstats command on the command line.

Problem:	Bulkstats files are not getting parsed.
Possible Cause(s):	<ul style="list-style-type: none"> • The Bulkstatistics Parser component is not running. • Bulkstat configuration may have been done through the CLI.
Action(s):	<ul style="list-style-type: none"> • Verify that the Bulkstatistic Parser process is running by entering the ps -ef grep bulkstatparser command. If it is not, execute the ./serv parserserver command from within the server directory (<ems_dir>/server by default). • Verify that the bulkstatistics format is compatible with the WEM. Refer to the <i>bs.cfg</i> file (located in the <ems_dir>/server/etc directory by default) for WEM bulkstatistic formatting.

Problem:	Bulkstatserver process is not started.
Possible Cause(s):	The function of 'bulkstatserver' is only to generate the XML files. It is possible that the “Generate XML Files” option was not enabled during installation.

Action(s):	<ul style="list-style-type: none"> For an existing installation, edit the “XMLDataEnable” parameter in the <i>etc/bserver.cfg</i> file to be set to “1” (enabled). Once the setting is changed and the files is saved, execute the <i>./serv bulkstatsserver start</i> command from within the server directory (<ems_dir>/server by default). For new installations, ensure that “Generate XML Files” option is selected during the installation process.
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Problem:	ASCII files are not getting generated.
Possible Cause(s):	Configuration may not be proper.
Action(s):	<p>Check for the following combination of configurables in <i>bserver.cfg</i>:</p> <ol style="list-style-type: none"> XMLFileType = 0 ASCIIFileGeneration = 1 Configure proper licenses in <i>emslic.cfg</i> <p>To reflect changes in any of the configurable values, restart the <i>bulkstatsserver</i>.</p> <hr/> <p> Important: If XMLFileType is set to 1, it will generate XML files irrespective of the other two mentioned configurables.</p>

Problem:	File header in bulkstats file is not proper.
Possible Cause(s):	The header might have been configured through CLI.
Action(s):	Always configure the header format through WEM only; else it will affect the <i>bulkstatparser</i> functionality.

Problem:	XML files are getting re-generated.
Possible Cause(s):	OverrideLastAccessFlag may be set to 1.
Action(s):	Check if <i>OverrideLastAccessFlag</i> in <i>bserver.cfg</i> is enabled. If it is enabled, disable it and restart the <i>bulkstatsserver</i> .

Problem:	XML/ASCII files ftp operation failing frequently.
Possible Cause(s):	<ul style="list-style-type: none"> Network problem PoolSize in <i>bserver.cfg</i> is not adequate
Action(s):	<ul style="list-style-type: none"> Check the network health to see if there is too much delay or packets getting dropped. Contact the network administrator in case of issues. If FTP is used, it is recommended that PoolSize should be 10. If SFTP is being used, Poolsize must be set to 3.

Problem:	Schema counters are not fetched/plotted properly.
----------	---------------------------------------------------

Possible Cause(s):	<ul style="list-style-type: none"> • Reconfiguration of schema is not done after upgrade. Refer to the <i>Reconfiguration of Bulkstat Schemas</i> section of this guide for more information. • Bulkstat parser is not running. • There is no data matching the filter criteria.
Action(s):	<ul style="list-style-type: none"> • After upgrade, reconfigure the bulkstat schema for reflecting the new schema changes, if any. • Start the bulkstatparser. • Check if the filter criteria is correct and ensure that the data is available for that period.

Problem:	Counter names are visible in data files.
Possible Cause(s):	<p>The counters are not supported on the system. There are two possibilities:</p> <ul style="list-style-type: none"> • Counters removed from the boxer build. In this case, WEM cannot remove the counters from schemas as WEM maintains backward compatibility. This does not have any impact on the WEM functionality. • System build is older than WEM build (for example, StarOS build 7.0 and WEM build 8.0). This does not have any impact on the WEM functionality. Bulkstat parser will ignore the counter strings while parsing data files.
Action(s):	No action required. This is a normal behavior.

Problem:	Issues with file 2-4 format.
Possible Cause(s):	WEM only supports 'file 1' format for configuring schemas - and only if it is configured through WEM. Problems related to other file formats are out of WEM scope.
Action(s):	No action required.

Issues Pertaining to Configuration Backup

Problem:	Configuration files are not getting backed up.
Possible Cause(s):	<ul style="list-style-type: none"> • No FTP server is running on the server. • Invalid FTP username password being used to transfer files from chassis to WEM server. • Inadequate user privileges for configbackup storage directory. • Solaris operating system patches may need to be updated. • Poor quality connection between chassis and WEM.
Action(s):	<ul style="list-style-type: none"> • Verify that the FTP server process is running on the server by issuing the ps -ef grep in.ftpd command. If it is not, start it. • Use the Configuration Backup screen to change the <i>FTPUsername</i> and <i>FTPPassword</i>. • Verify that the FTP user has permissions to write to the configured storage directory. • Verify that the latest Solaris operating system patches are installed. Refer to <i>WEM Port and Hardware Information</i> chapter of this guide for more information. • Slow connections could affect the data transfer between the chassis and the WEM server. In this case, contact your system administrator.

Issues Pertaining to Alarms

Problem:	The WEM is not receiving alarms.
Possible Cause(s):	<ul style="list-style-type: none"> Invalid configuration of SNMP target parameters on the chassis. An alternate application is receiving the alarms using the same port.
Action(s):	<ul style="list-style-type: none"> Verify that the SNMP target IP address and port number configured on the chassis match that of the WEM server. The SNMP target configuration on the chassis can be determined by entering the show snmp transports command. Check this information against the WEM server IP address ("<i>ServerIpAddress</i>", specified in the <i>nms.cfg</i> file) and the SNMP port number ("<i>SnmpTrapPort</i>", specified in the <i>fm.cfg</i> file) parameters. (Both of these files are located in the <i><ems_dir>/server/etc</i> directory by default.) Ensure no other application is running that receives the alarms on the port. Port status on the WEM server can be checked by executing the netstat -a command.

Problem:	Not able to receive Mail Notifications
Possible Cause(s):	<ul style="list-style-type: none"> The E-mail server is not running. Invalid Mail identification information configured within the WEM for notifications.
Action(s):	<ul style="list-style-type: none"> Verify that the E-mail parameters are properly configured in the <i>fm.cfg</i> file (located in the <i><ems_dir>/server/etc</i> directory by default). Verify that the E-mail server is running. Verify that the E-mail information configured in the Alarm Configuration dialog of the WEM is correct.

Problem:	Script execution on receiving ALARM fails
Possible Cause(s):	<ul style="list-style-type: none"> The WEM Script Server is not running. The script file is missing. The script file does not have proper executable permissions.
Action(s):	<ul style="list-style-type: none"> Verify that the Script Server is running by entering the ps -ef grep scriptsrv command. If it is not, execute the ./serv scriptserver command from within the server directory (<i><ems_dir>/server</i> by default). Verify that the script file is located in the <i><ems_dir>/server/scripts</i> directory (this is the default directory). If it is not, copy the script to that location. Verify that the script can be executed by entering the ls -al command from within the directory in which the script is located.

Issues Pertaining to the Process Monitor (PSMON)

Problem:	WEM processes are not restarted after a crash.
Possible Cause(s):	<ul style="list-style-type: none"> • PSMON is not running • Invalid PSMON configuration • The PSMON may have given up after performing multiple retries in a specific duration
Action(s):	<ul style="list-style-type: none"> • Verify that PSMON is running by entering the ps -ef grep psmon command. If it is not, start it using the instructions located in <i>WEM Process Monitor</i> chapter of this guide. • Verify that PSMON is configured with the proper entries to start WEM processes. These entries may not be available if they were not selected for monitoring during the installation process. Refer to the instructions located in <i>WEM Process Monitor</i> chapter of this guide for information on PSMON configuration. • The PSMON tries to restart the processes for "numretry" time within a duration of "tmintval" (refer to <i>etc/psmon.cfg</i>) per process. If the process still doesn't start, PSMON no longer monitors this process. Please check the <i><ems_dir>/log/watchdog.log</i> for details. Try restarting the process using the <i>serv</i> script.

Issues Pertaining to Starting and Stopping EMS Processes

Problem:	When starting or stopping a WEM process, the user receives the error message <i>ld.so.1: httpd: fatal: libgcc_s.so.1: open failed: No such file or directory.</i>
Possible Cause(s):	The configure runtime linking environment (crle) Default Library Path (ELF) on the SUN Solaris server does not contain the EMS library path.
Action(s):	<ul style="list-style-type: none"> • Log into the WEM Server as root and enter the crle command to view the current Default Library Path path. Here is an example where the crle path does not contain the EMS library path: <pre style="margin-left: 20px;"># crleConfiguration file [version 4]: /var/ld/ld.config Default Library Path (ELF):/lib:/usr/lib:/opt/gss/lib:/opt/postgres/lib:/users/gss/lib:/users/postgres/lib:/users/usr/lib Trusted Directories (ELF):/lib/secure:/usr/lib/secure (system default) Command line: crle -c /var/ld/ld.config -l /lib:/usr/lib:/opt/gss/lib:/opt/postgres/lib:/users/gss/lib:/users/postgres/lib:/users/usr/lib</pre> • If the crle Default Library Path does not contain the EMS library path, then use the following crle command to update it: <pre style="margin-left: 20px;"># crle -u -l \$EMS_INSTALL_PATH/server/lib</pre>

Issues Pertaining to Java

Problem:	The following message is displayed when attempting to access WEM dialogs containing tables after changing the look and feel option to Windows: <i>"java.lang.NullPointerException"</i> .
Possible Cause(s):	This may be an issue related to JRE 1.4.x.
Action(s):	If JRE 1.4.x is currently installed, uninstall it and then install JRE 1.5.

Problem:	The WEM Process Monitoring dialog shows <i>"Could not connect to server. Screen will not be invoked"</i> .
Possible Cause(s):	This may be an issue related to JRE 1.4.x.
Action(s):	If JRE 1.4.x is currently installed, uninstall it and then install JRE 1.5.

Problem:	<p>After enabling audio support from the Alarm Management menu, the browser window crashes with the following error message:</p> <p>An unexpected exception has been detected in native code outside the VM. Unexpected Signal: EXCEPTION_ACCESS_VIOLATION (0xc0000005) occurred at PC=0x7131B60 Function=[Unknown.] Library=C:\Program Files\Java\j2re1.4.2_04\bin\jsound.dll</p> <p>In addition, the stack trace output shows: Current Java thread: at com.sun.media.sound.MixerThread.runNative(Native Method) at com.sun.media.sound.MixerThread.run(Unknown Source)</p>
Possible Cause(s):	This may be an issue related to 1.4.x.
Action(s):	If 1.4.x is currently installed, uninstall it and then, install JRE 1.5.

Issues Pertaining to WEM Upgrade

Problem:	Migrate script is not working if postgres server is running on port other than default port.
Possible Cause(s):	Postgres communication port parameter is not passed to postgres application call through migrate script.
Action(s):	A script will prompt you to give some inputs for postgres communication port at the time of data restoration (Not at backup time) along with other input parameters (backup dir, WEM application path, postgres admin, password).

Problem:	Map could not be fetched after manual upgrade from version 'A' to version 'B'.
Possible Cause(s):	While manually upgrading from version 'A' to version 'B', you may have used the original migrate script i.e. the migrate script from version 'A' (since it is already available on the system) to restore the database.
Action(s):	While manually upgrading from version 'A' to version 'B', if you use migrate script from version 'A', database will be backed up. However, to restore the database, you have to use the migrate script from version 'B' i.e. the script that is packaged with the version that you are upgrading to. You will get latest migrate scripts for restoring the database after gunzip-untar of the latest <i>install.xxx.tar.gz</i> bundle. The reason behind doing this is that the recent scripts are likely to be upgraded from previous versions.

Capturing WEM Client Logs

In the event that an issue exists that could not be solved using the information provided previously in this chapter, you may need to capture client logs for debugging purposes. This section provides information on how to utilize logging for WEM clients.

- Step 1** Launch the web browser on the client machine.
- Step 2** Open the Java Console. Assuming that the client is a Microsoft Windows-based machine, this can be done using the following instructions:
- Step a** Right-mouse click on the *Java(TM) 2 Platform* icon in the status area (Windows System Tray).
 - Step b** Select **Open Console** from the menu.
- Step 3** Open the URL of the Web Element Management Server in the web browser, replacing `img.html` with `imgdebug.html`.
- Step 4** Login to the WEM and perform the operations causing the issues.
- The Java Console contains log messages that could be used for debugging the issue.

Capturing WEM Server Logs using Script

In the event additional troubleshooting assistance is required, debugging information can be collected using a script called *getSupportDetails.pl*. This script collects different log files and captures the output of certain system commands that aid in troubleshooting issues. This script is packaged with the WEM Server in the `<EMS_INSTALL_DIR>/tools/supportdetails/` directory.

This script refers to an XML file to get the list of logs. This XML resides in the same directory as the script. Once executed, the script retrieves the contents of logs, files, folders, and output of certain commands and prepares a zipped file (`/tmp/log/emssupportDetails.tar.gz`), by default it is placed in `/tmp/log` directory.

Requirements:

Perl 5.8.5 and above is required for running the script. This is packaged with the WEM Server.

Apart from standard Perl modules (which are included in default installation of Perl), some additional modules are required for running the script. The list is as follows:

- expat version 1.95.8
- expat version 1.95.8
- XML:Parser version 2.34
- XML-Parser-EasyTree
- Devel-CoreStack version 1.3

These modules are installed by default by the WEM application. Please ensure that the above mentioned modules are installed when using a different installation of Perl.

To run the script, go to the path where the script is present and enter:

```
./getSupportDetails.pl [--level=...] [--xmlfile=...] [--outputDir=] [--help]
```

<code>--level</code>	Specifies the level of debug to run. It can have a maximum of 4 levels. The level 4 provides the most detailed information. Refer to <i>README.txt</i> file for more information. Default: 1
<code>--xmlfile</code>	Specifies the xml file name to be used for collecting the log. Default: <i>getSupportDetails.xml</i>
<code>--outputDir</code>	Specifies the output directory for the <i>emssupportDetails.tar.gz</i> file if different from the default output directory (<i>/tmp/</i>).
<code>--help</code>	Display this information.

For example:

```
./getSupportDetails --level=4 --xmlfile=/tmp/something.xml --outputDir=/mywemlogscripts
```

WEM IP Address Change Procedure

In the event the customer's network evolves, the IP address of the Solaris server might be required to change from the existing one. In order to change the WEM server IP address, use the following defined IP planning process:

Step 1 Stop the EMS server using the following command:

```
./serv stop
```

Step 2 Change the interface IP address using the ifconfig command. For example:

```
ifconfig bge0 192.168.1.1 netmask 255.255.255.0 up
```

Step 3 Change the new IP address in the nms.cfg file of the WEM configuration. For this, use the vi editor as follows:

```
vi nms.cfg
```

Replace the IP address with the new IP address in the modify serverIpAddress field. For example:

```
ServerIpAddress = 192.168.1.1
```

Save the file after making the appropriate changes.

Step 4 Modify the host file of the Solaris server using following commands:

```
# cat /etc/hosts  
  
<IP address> localhost  
  
<new_IP_address> solaris_hostname  
  
#
```

Step 5 Start the EMS server after these settings changes using the following command:

```
./serv start
```



Important: */etc/netmasks* needs to be modified if the user is subnetting existing address and subsequently using a different network mask than the default one. If the netmask being used for a given IP address is a default one, then there is no need to modify this file.

Appendix B

WEM Configuration File Parameters

This appendix provides information about the configuration file parameters pertaining to the Web Element Manager. WEM provides a number of configuration files which can be modified to fine-tune the operation of the application. These files are located in the `/<ems_dir>/server/etc` directory by default.

The following configuration files have been deprecated from WEM:

- `fmcorelation.cfg`
- `description.cfg`
- `dbphy.cfg`
- `dblog.cfg`

This chapter provides information on the following configuration files:

- [The alarmid.cfg File](#)
- [The audio.cfg File](#)
- [The blacklist.cfg File](#)
- [The bs.cfg File](#)
- [The bsparser.cfg File](#)
- [The bsserver.cfg File](#)
- [The bstca.cfg File](#)
- [The cf.cfg File](#)
- [The configupdate.cfg File](#)
- [The db.cfg File](#)
- [The emslic.cfg File](#)
- [The fm.cfg File](#)
- [The hwinv.cfg File](#)
- [The ism.cfg File](#)
- [The mcrdbs.cfg File](#)
- [The mdproxy.cfg File](#)
- [The nb.cfg File](#)
- [The nbserver.cfg File](#)
- [The nms.cfg File](#)
- [The processmonitor.cfg File](#)
- [The ps.cfg File](#)
- [The psmon.cfg File](#)

WEM IP Address Change Procedure

- [The res.cfg File](#)
- [The temp.cfg File](#)
- [The thr.cfg File](#)
- [The ua.cfg File](#)
- [The vacuum.cfg File](#)
- [The wblast.cfg File](#)

The alarmid.cfg File

This file provides parameters pertaining to the configuration of SNMP alarms received from managed devices.



Important: This configuration file is customer-specific and is not operational without the appropriate license. Please contact your local sales representative for additional information.

The audio.cfg File

This file provides alarm severity associations to specific audio files. The audio files are in .WAV format and are played by the Web Element Manager when an alarm/trap of that severity is received. Additionally, this file can be used to associate an audio file to a specific alarm for further customizing.

The following table describes the **AUDIO** file parameters.

Parameters		
<p>AUDIO: This file contains the mapping of the alarm severity level and the corresponding audio file to be played when an alarm is received. The first field contains the severity level (number): The nth row in the SEVERITY section is n-1 in the <i>fm.cfg</i> file. Please use the <i>fm.cfg</i> file for the severity configuration information in detail. The second field contains the audio file name. The audio files are present in the audio sub-directory in the client installation directory. The format is as follows: Severity Number = WAV File Path For example: 1 = Blank Line - This means that no audio file is to be played when a first level (Indeterminate) severity alarm is received. 3 = audio/chord.wav - This means that the audio/chord.wav file is to be played when a third level (Major) severity alarm is received.</p>		
<p>audioPlayedFor: This option will decide the priority of alarm to play an audio. The default value is 0. Valid configurables are: 0 - Only STxx audio will be played as per severity and no audio will be played for WEM alarm. 1 - Audio for STxx and WEM will be played but severity will be given to STxx alarms. 2 - Audio for STxx and WEM will be played but first priority will be based on device and severity. 3 - Audio will be played strictly based on the severity irrespective of STxx/WEM.</p>		
Severity No.	Severity Name	Audio Filename
1	Critical	1 = audio/notify.wav
2	Major	2 = audio/ding.wav
3	Minor	3 = audio/chord.wav
4	Warning	4 = audio/AlarMrng.wav

The following table describes the **TRAPAUDIO** file parameters.

Parameters
<p>TRAPAUDIO: This section defines the mapping for Trap Number and the corresponding AUDIO file. This file is the default file to be played when the trap is received. If the filename field is kept empty then, the file associated with the severity of the trap will be played. Severity-AudioFilename relationship is defined in the AUDIO section. The format is as follows: Trap Number = File Path For example: 1 = This suggests that no audio file is associated with trap #1. So, the file associated with its severity will be played. 3 = audio/test01.wav - This file will be played whenever trap #3 comes.</p>

Parameters	
Trap Number	Trap Name
Generic Alarms	
1-1	coldStart
1-2	warmStart
1-3	linkDown
1-4	linkUp
1-5	authenticationFailure
1-6	egpNeighborLoss
ST 16 Enterprise Alarms	
2-1	starCardTempOverheat
2-2	starCardTempOK
2-3	starCardReset
2-4	starCardRebootRequest
2-5	starCardUp
2-6	starCardVoltageFailure
2-7	starCardRemoved
2-8	starCardInserted
2-9	starCardBootFailed
2-12	starCardRCCFailed
2-13	starCardMismatch
2-14	starCardFailureLEDOOn
2-15	starCardFailureLEDOff
2-16	starCardPACMigrateStart
2-17	starCardPACMigrateComplete
2-18	starCardPACMigrateFailed
2-19	starCardSPCSwitchoverStart
2-20	starCardSPCSwitchoverComplete
2-21	starCardSPCSwitchoverFailed
2-22	starFanFailed
2-23	starFanRemoved
2-24	starFanInserted
2-25	starLogThreshold

■ The audio.cfg File

Parameters	
2-26	starCPUBusy
2-27	starCPUMemoryLow
2-28	starCPUMemoryFailed
2-29	starCPUFailed
2-30	starCPUWatchDogExpired
2-31	starNPUARPPoolExhausted
2-32	starPowerFilterUnitUnavail
2-33	starPowerFilterRemoved
2-34	starPowerFilterAvail
2-37	starAlertsDisabled
2-38	starAlertsEnabled
2-39	starAAAAuthServerUnreachable
2-40	starAAAAuthServerReachable
2-41	starAAAAuthServerMisconfigured
2-42	starAAAAccServerUnreachable
2-43	starAAAAccServerReachable
2-44	starAAAAccServerMisconfigured
2-45	starLogMsg
2-46	starPDSNServiceStart
2-47	starPDSNServiceStop
2-48	starHAServiceStart
2-49	starHAServiceStop
2-50	starFAServiceStart
2-51	starFAServiceStop
2-52	starCLISessionStart
2-53	starCLISessionEnd
2-54	starCritTaskFailed
2-55	starCardActive
2-56	starLACServiceStart
2-57	starLACServiceStop
2-58	starLNSServiceStart
2-59	starLNSServiceStop

Parameters	
2-60	starCardDown
2-63	starGGSNServiceStart
2-64	starGGSNServiceStop
2-65	starLicenseExceeded
2-66	starSubscriberLimit
2-67	starSessionRejectNoResource
2-68	starLongDurTimerExpiry
2-69	starClosedRPServiceStart
2-70	starClosedRPServiceStop
2-71	starGtpcPathFailure
2-72	starGtpuPathFailure
2-73	starManagerFailure
2-74	starEISServerAlive
2-75	starEISServerDead
2-76	starCgfAlive
2-77	starCgfDead
2-78	starStorageServerAlive
2-79	starStorageServerDead
2-80	starGgsnInitiatedUpdtFailed
2-81	starCongestion
2-82	starCongestionClear
2-83	starServiceLossPTACs
2-84	starServiceLossLC
2-85	starServiceLossSPIO
2-86	starIPSPAllAddrsFree
2-87	starPCFUnreachable
2-88	starDhcpAlive
2-89	starDhcpDead
2-90	starNTPPeerUnreachable
2-91	starNTPSyncLost
2-92	starL2TPTunnelDownPeerUnreachable
2-93	starCardStandby

■ The audio.cfg File

Parameters	
2-94	starLicenseUnderLimit
2-95	starIPSECPriTunDown
2-96	starIPSECPriTunUp
2-97	starIPSECSecTunDown
2-98	starIPSECSecTunUp
2-99	starIPSECTunSwitchFail
2-100	starIPSECTunSwitchComplete
2-101	starNwReachServerAlive
2-102	starNwReachServerDead
2-103	starStorageServerUnackedGcdrVolPurge
2-104	starStorageServerUnackedGcdrFileGen
2-200	starThreshCPUUtilization
2-201	starThreshClearCPUUtilization
2-202	starThreshCPUMemory
2-203	starThreshClearCPUMemory
2-204	starThreshLicence
2-205	starThreshClearLicence
2-206	starThreshSubscriberTotal
2-207	starThreshClearSubscriberTotal
2-208	starThreshSubscriberActive
2-209	starThreshClearSubscriberActive
2-210	starThreshPortRxUtil
2-211	starThreshClearPortRxUtil
2-212	starThreshPortTxUtil
2-213	starThreshClearPortTxUtil
2-214	starThreshPortHighActivity
2-215	starThreshClearPortHighActivity
2-216	starThreshAAAAuthFail
2-217	starThreshClearAAAAuthFail
2-218	starThreshAAAAuthFailRate
2-219	starThreshClearAAAAuthFailRate
2-220	starThreshAAAacctFail


Parameters	
2-221	starThreshClearAAAacctFail
2-222	starThreshAAAacctFailRate
2-223	starThreshClearAAAacctFailRate
2-224	starThreshAAARetryRate
2-225	starThreshClearAAARetryRate
2-226	starThreshCallSetup
2-227	starThreshClearCallSetup
2-228	starThreshCallSetupFailure
2-229	starThreshClearCallSetupFailure
2-230	starThreshCallRejectNoResource
2-231	starThreshClearCallRejectNoResource
2-232	starThreshPacketsFilteredDropped
2-233	starThreshClearPacketsFilteredDropped
2-234	starThreshPacketsForwarded
2-235	starThreshClearPacketsForwarded
2-236	starThreshSessCPUThroughput
2-237	starThreshClearSessCPUThroughput
2-238	starThreshIPPoolAvail
2-239	starThreshClearIPPoolAvail
2-240	starThreshCPUUtilization10Sec
2-241	starThreshClearCPUUtilization10Sec
2-242	starThreshCPULoad
2-243	starThreshClearCPULoad
2-244	starThreshCPUMemUsage
2-245	starThreshClearCPUMemUsage
2-246	starThreshPDSNSessions
2-247	starThreshClearPDSNSessions
2-248	starThreshGGSNSessions
2-249	starThreshClearGGSNSessions
2-250	starThreshHASessions
2-251	starThreshClearHASessions
2-252	starThreshLNSSessions

■ The audio.cfg File

Parameters	
2-253	starThreshClearLNSSessions
2-254	starThreshPerServicePDSNSessions
2-255	starThreshClearPerServicePDSNSessions
2-256	starThreshPerServiceGGSNSessions
2-257	starThreshClearPerServiceGGSNSessions
2-258	starThreshPerServiceHASessions
2-259	starThreshClearPerServiceHASessions
2-260	starThreshPerServiceLNSSessions
2-261	starThreshClearPerServiceLNSSessions
2-262	starThreshIPPoolHold
2-263	starThreshClearIPPoolHold
2-264	starThreshIPPoolUsed
2-265	starThreshClearIPPoolUsed
2-266	starThreshIPPoolRelease
2-267	starThreshClearIPPoolRelease
2-268	starThreshIPPoolFree
2-269	starThreshClearIPPoolFree
2-270	starThreshAAAacctArchive
2-271	starThreshClearAAAacctArchive

The blacklist.cfg File

This file contains the flag that is set to enable or disable the blacklisting feature in WEM. The file provides parameters for specifying information such as blacklist backup limit, time interval to poll the blacklist directory, and so on.

Key	Description	Minimum Value	Maximum Value	Default Value
BLACKLIST: This section describes parameters that store information related to blacklisting.				
EnableBlackListFeature	Flag to enable/disable the blacklisting feature in WEM. Setting this flag to 1 will enable the blacklisting feature in WEM. Needs a WEM Server restart. Values: 1: Enable 0: Disable	--	--	0
BlacklistBackupLimit	Number of Blacklist backups to be maintained.	5	15	10
ExportBLtoCDPIInterval	BlackList files Export interval. This specifies the time interval in hours for Content Filtering Server to export OPTCMDB-BL to CDP.	1 hr	5 hrs	2 hrs
BIPollInterval	BlackList directory poll interval. This specifies the time interval in minutes to poll the Blacklist directory.	5	60	15
EnableDNSLookup	Flag to enable/disable the DNS lookup functionality. Setting this flag to 1 will enable the DNS lookup functionality. Values: 1: Enable 0: Disable	--	--	0
ThreadPoolSize	Thread pool size.	1	10	5
NCMEC:				
EnableNCMEC	Flag to enable/disable the import of cumulative.csv from NCMEC. Setting this flag to 1 will enable the import of cumulative.csv from NCMEC. Values: 1: Enable - import cumulative.csv from NCMEC 0: Disable - assume cumulative.csv will be available in <EMS ServerPath>/flash/blacklist/blacklist/  Important: Do not change the value of configurable as functionality when this flag 0 is disabled	--	--	1
NCMECUrl	This specifies the cumulative.csv file path at NCMEC.	--	--	--

■ The blacklist.cfg File

Key	Description	Minimum Value	Maximum Value	Default Value
NCMECAuthUserName	This specifies the username required for authentication at NCMEC site.	--	--	--
NCMECAuthPassword	This specifies the password required for authentication at NCMEC site.	--	--	--
BlacklistImportInterval	This specifies the cumulative.csv file import interval (in hours).	1	168 (one week)	24 (one day)
BlacklistReImportInterval	This specifies the cumulative.csv file re-import interval (in minutes).	1	30	5
BLThreadPoolSize	Specifies the blacklist thread pool size.	10	10	10

The bs.cfg File

This file provides bulk statistic configuration information pertaining to schemas, formatting, and parameters for specifying time tolerances for searching bulk statistic records. This is a multi-section server configuration file for bulkstat module.



Important: Any change in the configuration files will restart the server resulting in client restart.



Caution: To ensure proper operation of the Web Element Manager, bulk statistic schema and formatting configuration in this file should not be altered.

Key	Description	Default Value in Config File
Schema: This section provides the schema format string for each subsystem. The parameter values in this section are internally used by the bulkstat server module and should not be changed.		
Card Sch	Card Schema	EMS,Card,%date%,%time%,%card%,%cpubusy%,%cpuidle%,%numproc%,%memused%,%memtotal%,%numcpu%,%cpu0-cpubusy%,%cpu0-cpuidle%,%cpu0-numproc%,%cpu0-memused%,%cpu0-memtotal%,%cpu0-cpuused-user%,%cpu0-cpuused-sys%,%cpu0-cpuused-io%,%cpu0-cpuused-irq%,%cpu0-cpuused-idle%,%cpu1-cpubusy%,%cpu1-cpuidle%,%cpu1-numproc%,%cpu1-memused%,%cpu1-memtotal%,%cpu1-cpuused-user%,%cpu1-cpuused-sys%,%cpu1-cpuused-io%,%cpu1-cpuused-irq%,%cpu1-cpuused-idle%,%cpu2-cpubusy%,%cpu2-cpuidle%,%cpu2-numproc%,%cpu2-memused%,%cpu2-memtotal%,%cpu2-cpuused-user%,%cpu2-cpuused-sys%,%cpu2-cpuused-io%,%cpu2-cpuused-irq%,%cpu2-cpuused-idle%,%cpu3-cpubusy%,%cpu3-cpuidle%,%cpu3-numproc%,%cpu3-memused%,%cpu3-memtotal%,%cpu3-cpuused-user%,%cpu3-cpuused-sys%,%cpu3-cpuused-io%,%cpu3-cpuused-irq%,%cpu3-cpuused-idle%,%15avg-cpubusy%,%15peak-cpubusy%,%5avg-cpubusy%,%5peak-cpubusy%,%1avg-cpubusy%,%15avg-memused%,%15peak-memused%,%5avg-memused%,%5peak-memused%,%1avg-memused%,%cpu0-15avg-cpubusy%,%cpu0-15peak-cpubusy%,%cpu0-5avg-cpubusy%,%cpu0-5peak-cpubusy%,%cpu0-1avg-cpubusy%,%cpu0-15avg-memused%,%cpu0-15peak-memused%,%cpu0-5avg-memused%,%cpu0-5peak-memused%,%cpu1-15avg-cpubusy%,%cpu1-15peak-cpubusy%,%cpu1-5avg-cpubusy%,%cpu1-5peak-cpubusy%,%cpu1-1avg-cpubusy%,%cpu1-15avg-memused%,%cpu1-15peak-memused%,%cpu1-1avg-memused%,%cpu2-15avg-cpubusy%,%cpu2-15peak-cpubusy%,%cpu2-5avg-cpubusy%,%cpu2-5peak-cpubusy%,%cpu2-1avg-cpubusy%,%cpu2-15avg-memused%,%cpu2-15peak-memused%,%cpu2-5avg-memused%,%cpu2-5peak-memused%,%cpu2-1avg-memused%,%cpu3-15avg-cpubusy%,%cpu3-15peak-cpubusy%,%cpu3-5avg-cpubusy%,%cpu3-5peak-cpubusy%,%cpu3-1avg-cpubusy%,%cpu3-15avg-memused%,%cpu3-15peak-memused%,%cpu3-5avg-memused%,%cpu3-5peak-memused%,%cpu3-1avg-memused%,%task-sessmgr-num%
Card Sch2	Card 2 Schema	EMS,Card2,%date%,%time%,%card%,%task-sessmgr-avgcpu%,%task-sessmgr-avgmem%,%task-sessmgr-maxcpu%,%task-sessmgr-maxmem%,%task-a11mgr-num%,%task-a11mgr-maxcpu%,%task-a11mgr-maxmem%,%task-l2tpmgr-num%,%task-l2tpmgr-maxcpu%,%task-l2tpmgr-maxmem%,%task-famgr-num%,%task-famgr-maxcpu%,%task-famgr-maxmem%,%task-hamgr-num%,%task-hamgr-maxcpu%,%task-hamgr-maxmem%,%task-acsmgr-num%,%task-acsmgr-avgcpu%,%task-acsmgr-avgmem%,%task-acsmgr-maxcpu%,%task-acsmgr-maxmem%,%task-vpnmgr-num%,%task-vpnmgr-maxcpu%,%task-vpnmgr-maxmem%

The bs.cfg File

Key	Description	Default Value in Config File
Port Sch	Port Schema	EMS,Port,%date%,%time%,%card%,%port%,%rxbytes%,%txbytes%,%ucast_inpackets%,%ucast_outpackets%,%mcast_inpackets%,%mcast_outpackets%,%bcast_inpackets%,%bcast_outpackets%,%rxpackets%,%txpackets%,%rxdiscbytes%,%rxdiscpackets%,%txdiscbytes%,%txdiscpackets%,%maxrate%,%frag-rcvd%,%pkt-reassembled%,%frag-tokenel%,%util-rx-curr%,%util-tx-curr%,%util-rx-5min%,%util-tx-5min%,%util-rx-15min%,%util-tx-15min%
PDS NSys temS ch	PD SN Sys tem Schema	EMS,PDSNSSystem,%date%,%time%,%sess-ttlarrived%,%sess-ttlrejected%,%sess-ttlconnected%,%sess-ttlauthsucc%,%sess-ttlauthfail%,%sess-ttlcpup%,%sess-ttlipcpup%,%sess-ttlsrcviol%,%sess-ttlkeepfail%,%sess-curttlcalls%,%sess-cursipconn%,%sess-curmipconn%,%sess-curactcall%,%sess-curdormcall%,%sess-curarrived%,%sess-curclpnegot%,%sess-curclcpup%,%sess-curauth%,%sess-curauthed%,%sess-curipcpup%,%sess-curdisc%,%a11-ttlarrived%,%a11-ttlrejected%,%a11-ttldemult%,%a11-ttldereg%,%a11-curactive%,%fa-ttlarrived%,%fa-ttlrejected%,%fa-ttldemult%,%fa-ttldereg%,%fa-curactive%,%ha-ttlarrived%,%ha-ttlrejected%,%ha-ttldemult%,%ha-ttldereg%,%ha-curactive%,%sess-callldur-1min%,%sess-callldur-2min%,%sess-callldur-5min%,%sess-callldur-15min%,%sess-callldur-1hour%,%sess-callldur-4hour%,%sess-callldur-12hour%,%sess-callldur-24hour%,%sess-callldur-over24hour%,%sess-setuptime-100ms%,%sess-setuptime-200ms%,%sess-setuptime-300ms%,%sess-setuptime-400ms%,%sess-setuptime-500ms%,%sess-setuptime-600ms%,%sess-setuptime-700ms%,%sess-setuptime-800ms%,%sess-setuptime-900ms%,%sess-setuptime-1sec%,%sess-setuptime-2sec%,%sess-setuptime-3sec%,%sess-setuptime-4sec%,%sess-setuptime-6sec%,%sess-setuptime-8sec%,%sess-setuptime-10sec%,%sess-setuptime-12sec%,%sess-setuptime-14sec%,%sess-setuptime-16sec%,%sess-setuptime-over16sec%,%incremental%,%enddate%,%endtime%,%localenddate%,%localendtime%,%sess-ttlfailed%,%uptime%,%uptimestr%,%lic-pdsn%,%lic-ha%,%lic-ggsn%,%lic-l2tplns%,%sess-txbytes%,%sess-rxbytes%,%sess-txpackets%,%sess-rxpackets%,%sess-siptxbytes%,%sess-siprxbytes%,%sess-miptxbytes%,%sess-miprxbytes%,%aaa-ttlreq%,%aaa-curreq%,%aaa-ttlauthreq%,%aaa-curauthreq%,%aaa-ttlauthprobe%,%aaa-curauthprobe%,%aaa-ttlaccreq%,%aaa-curaccreq%,%aaa-ttlauthsucc%,%aaa-ttlauthfail%,%aaa-ttlauthpurged%,%aaa-ttlauthcancelled%,%aaa-ttlauthdmuchal%,%aaa-ttlradauthreq%,%aaa-curradauthreq%,%aaa-ttlradauthreqretried%,%aaa-ttlclauthreq%,%aaa-curclauthreq%,%aaa-ttlpseudoauthreq%,%aaa-curpseudoauthreq%,%aaa-ttlauthnulluser%,%aaa-ttlacctsucc%,%aaa-ttlacctpurgd%,%aaa-ttlacctcancelled%,%aaa-ttlradaccreq%,%aaa-ttlradaccreqretried%,%disc-reason-summary%,%sess-curaaaactive%,%sess-curaaaadeleting%,%sess-curaaaactpending%,%sess-ttlempy fwd%,%sess-ttlempyrev%,%sess-tlonlineprepaiderr%,%sess-ttlprepaidinitautherr%,%sess-ttlcrprpattempt%,%sess-ttlcrprpsuccess%,%sess-ttlrprpattempt%,%sess-ttlrprpsuccess%,%sess-curpmipconn%,%sess-cur12tplacconn%,%sess-curalwayson%,%sess-curbcmcsauth%,%sess-curbcmcsconn%,%sess-curhaipseconn%,%sess-cur12tplacconnecting%,%sess-curpdptypeipconn%,%sess-curpdptypepppconn%,%sess-curprepaid%,%sess-rxpkt-1023%,%sess-rxpkt-127%,%sess-rxpkt-16%,%sess-rxpkt-2047%,%sess-rxpkt-255%,%sess-rxpkt-4095%,%sess-rxpkt-4500%,%sess-rxpkt-511%,%sess-rxpkt-64%,%sess-rxpkt-over4500%,%sess-ttlisconn%,%sess-ttlhandoff%,%sess-ttlonlineauthfail%,%sess-ttlonlineauthreq%,%sess-ttlonlineauthsucc%,%sess-ttlprepaid%,%sess-ttlproxyns-drop%,%sess-ttlproxyns-passthru%,%sess-ttlproxyns-redirect%,%sess-ttlrenewal%,%sess-tpkt-1023%,%sess-tpkt-127%,%sess-tpkt-16%,%sess-tpkt-2047%,%sess-tpkt-255%,%sess-tpkt-4095%,%sess-tpkt-4500%,%sess-tpkt-511%,%sess-tpkt-64%,%sess-tpkt-over4500%,%aaa-ttlauthkeepalive%,%aaa-curauthkeepalive%,%aaa-ttlacctkeepalive%,%aaa-curacctkeepalive%,%aaa-ttlauthkeepalivesuccess%,%aaa-ttlauthkeepalivefailure%,%aaa-ttlauthkeepalivepurged%,%aaa-ttlacctkeepalivesuccess%,%aaa-ttlacctkeepalivetimeout%,%aaa-ttlacctkeepalivepurged%,%ipsg-total-call-arrived%,%ipsg-total-call-rejected%,%ipsg-total-call-demult%,%ipsg-total-dereg-rep-sent%,%ipsg-cur-active-call%,%ipsg-total-active-serv%

Key	Description	Default Value in Config File
PDS NSys temSch2	PD SN 2 Sys tem Sch ema	EMS,PDSNSystem2,%date%,%time%,%asngw-cur-active-call%,%asngw-total-sess-setup%,%asngw-retriesexhaust%,%asngw.sfs%,%asngw.tidfail%,%asngw-handoffattempt%,%asngw-handoffdenied%,%asngw-handoffcomp%,%asngw.authsucc%,%asngw-authfailures%,%sess-ttlcallop%,%sess-curnonanchorconn%,%sess-curdhcpping%,%sess-ttlinterasngwattempt%,%sess-ttlinterasngwsuccess%,%sess-ttlintraasngwattempt%,%sess-ttlintraasngwsuccess%,%sess-ttlconnected-1xrtt%,%sess-txbytes-1xrtt%,%sess-rxbytes-1xrtt%,%sess-tpackets-1xrtt%,%sess-rxpackets-1xrtt%,%sess-ttlconnected-evdorev0%,%sess-txbytes-evdorev0%,%sess-rxbytes-evdorev0%,%sess-tpackets-evdorev0%,%sess-rxpackets-evdorev0%,%sess-ttlconnected-evdoreva%,%sess-txbytes-evdoreva%,%sess-rxbytes-evdoreva%,%sess-tpackets-evdoreva%,%sess-rxpackets-evdoreva%,%flow-ttlestab%,%flow-tldisconn%,%flow-curdynamic%,%pdif-cursess%,%pdif-curactive%,%pdif-curdormant%,%pdif-ttlsetup%,%sess-15peak-curactcall%,%sess-15peak-curtlcall%,%sess-cursipactive%,%sess-15peak-cursipactive%,%sess-curmipactive%,%sess-15peak-curmipactive%,%a11-15peak-curactive%,%crp-curactive%,%crp-15peak-curactive%,%fa-15peak-curactive%,%ha-15peak-curactive%,%flow-15peak-curdynamic%,%sess-15min-usageactive%,%sess-15min-usageall%,%cc-cursess%,%cc-ttlecsadd%,%cc-ttlstart%,%cc-ttlsessupd%,%cc-ttlterm%,%cc-sessfailover%,%cc-msg-recv%,%cc-msg-sent%,%cc-msg-request%,%cc-msg-answer%,%cc-msg-ccrinit%,%cc-msg-ccainit%,%cc-msg-ccainitaccept%,%cc-msg-ccainitreject%,%cc-msg-ccainitimeout%,%cc-msg-ccrupdate%,%cc-msg-ccaupdate%,%cc-msg-ccaupdatetimeout%,%cc-msg-ccrfinal%,%cc-msg-ccafinal%,%cc-msg-ccafinaltimeout%,%cc-msg-asr%,%cc-msg-asa%,%cc-msg-rar%,%cc-msg-raa%,%cc-msg-ccdropped%,%cc-msgerr-PROTO%,%cc-msgerr-badanswer%,%cc-msgerr-unknownsess%,%cc-msgerr-unknowncomm%,%cc-msgerr-reqtimeout%
PDS NSys temSch3	PD SN 3 Sys tem Sch ema	EMS,PDSNSystem3,%date%,%time%,%cc-msgerr-parse%,%cc-msgerr-unkratinggrp%,%cc-msgerr-unkrulebase%,%cc-msgerr-unkfailure%,%cc-upd-threshold%,%cc-upd-qht%,%cc-upd-final%,%cc-upd-quotaexhaust%,%cc-upd-validitytime%,%cc-upd-otherquota%,%cc-upd-ratingchange%,%cc-upd-forcedreauth%,%cc-term-diamlogout%,%cc-term-servnotprov%,%cc-term-badanswer%,%cc-term-admin%,%cc-term-linkbroken%,%cc-term-authexpired%,%cc-term-usermoved%,%cc-term-sesstimeout%,%cc-trafficcreate%,%cc-trafficdelete%,%cc-trafficlookup%,%cc-traffic-hits%,%cc-traffic-misses%,%cc-traffic-triggerevent%,%cc-traffic-finalunit%,%cc-traffic-catsuccess%,%cc-traffic-ratingfail%,%cc-traffic-servdenied%,%cc-traffic-limitreached%,%cc-traffic-authreject%,%cc-traffic-othererror%,%cf-static-ratereq%,%cf-static-ratesucc%,%cf-static-rateblock%,%cf-static-ratefail%,%cf-static-ratefail-nr%,%cf-static-ratefail-notindb%,%cf-dyn-ratereq%,%cf-dyn-ratesucc%,%cf-dyn-rateblock%,%cf-dyn-ratefail%,%cf-ratereq%,%cf-ratesucc%,%cf-rateblock%,%cf-ratefail%,%ikev2-cursa%,%ikev2-cursainit%,%ikev2-cursaresp%,%ikev2-ttlsa%,%ikev2-ttlsainit%,%ikev2-ttlsaresp%,%ikev2-attempt%,%ikev2-attemptinit%,%ikev2-attemptresp%,%ikev2-rxpacket%,%ikev2-txpacket%,%ikev2-rxoctet%,%ikev2-txoctet%,%ikev2-initfail%,%ikev2-initfail-noresp%,%ikev2-initfail-resp%,%ikev2-invcookie%,%ikev2-nattkeepalive-recv%,%ikev2-nattkeepalive-send%,%ikev2-dpd-recv%,%ikev2-dpd-send%,%ikev2-dpd-recv-reply%,%ikev2-dpd-send-reply%,%ikev2-dpd-timeout%,%ikev2-dpd-disconnect%,%ikev2-dpd-plrekey%,%lic-combo-phone%,%lic-ecsv2%,%lic-ip-services-gateway%,%lic-evdoreva-pdsn%,%lic-scm-proxyregistrar-ietfRFC3261%,%lic-scm-proxypescf%,%lic-scm-servingsescf%,%lic-scm-interrogatingiescf%,%lic-asngw%,%lic-asnlr%,%cf-cache-hits%,%cf-cache-misses%,%cf-cache-has-path-hits%,%cf-cache-flushes%,%sess-curimsauthorized%
PDS NSys temSch4	PD SN 4 Sys tem Sch ema	EMS,PDSNSystem4,%date%,%time%,%sess-curimsauthorizing%,%pdif-curchildsa%,%ikev2-ikesadel%,%ikev2-ikesadelrep-recv%,%ikev2-ikesadelrep-sent%,%ikev2-ikesadelreq-recv%,%ikev2-ikesadelreq-sent%,%ipsec-dpd-plrekey%

Key	Description	Default Value in Config File
GGSNSystemSchema	GGSNSystemSchema	EMS,GGSNSystem,%date%,%time%,%sess-ttlarrived%,%sess-ttlrejected%,%sess-ttlconnected%,%sess-ttlauthsucc%,%sess-ttlauthfail%,%sess-ttlcpup%,%sess-ttlipcpup%,%sess-ttlsrcviol%,%sess-ttlkeepfail%,%sess-curttlcalls%,%sess-cursipconn%,%sess-curmipconn%,%sess-curactcall%,%sess-curdormcall%,%sess-curarrived%,%sess-curicpnegot%,%sess-curicpup%,%sess-curauth%,%sess-curauthed%,%sess-curipcpup%,%sess-curdisc%,%sess-callldur-1min%,%sess-callldur-2min%,%sess-callldur-5min%,%sess-callldur-15min%,%sess-callldur-1hour%,%sess-callldur-4hour%,%sess-callldur-12hour%,%sess-callldur-24hour%,%sess-callldur-over24hour%,%sess-setuptime-100ms%,%sess-setuptime-200ms%,%sess-setuptime-300ms%,%sess-setuptime-400ms%,%sess-setuptime-500ms%,%sess-setuptime-600ms%,%sess-setuptime-700ms%,%sess-setuptime-800ms%,%sess-setuptime-900ms%,%sess-setuptime-1sec%,%sess-setuptime-2sec%,%sess-setuptime-3sec%,%sess-setuptime-4sec%,%sess-setuptime-6sec%,%sess-setuptime-8sec%,%sess-setuptime-10sec%,%sess-setuptime-12sec%,%sess-setuptime-14sec%,%sess-setuptime-16sec%,%sess-setuptime-over16sec%,%incremental%,%enddate%,%endtime%,%localenddate%,%localendtime%,%sess-ttlfailed%,%uptime%,%uptimestr%,%lic-ggsn%,%lic-12tplns%,%sess-txbytes%,%sess-rxbytes%,%sess-txpackets%,%sess-rxpackets%,%sess-siptxbytes%,%sess-siprxbytes%,%sess-miptxbytes%,%sess-miprxbytes%,%aaa-ttlreq%,%aaa-curreq%,%aaa-tlauthreq%,%aaa-curauthreq%,%aaa-tlauthprobe%,%aaa-curauthprobe%,%aaa-tlacctreq%,%aaa-curacctreq%,%aaa-tlauthsucc%,%aaa-tlauthfail%,%aaa-tlauthpurged%,%aaa-tlauthcancelled%,%aaa-tlauthdmuchal%,%aaa-tlradauthreq%,%aaa-curradauthreq%,%aaa-tlradauthreqretried%,%aaa-ttlclauthreq%,%aaa-curclauthreq%,%aaa-ttlpseudoauthreq%,%aaa-curpseudoauthreq%,%aaa-tlauthnulluser%,%aaa-ttlacctsucc%,%aaa-tlacctpurged%,%aaa-tlacctcancelled%,%aaa-tlradacctreq%,%aaa-tlradacctreqretried%,%disc-reason-summary%,%sess-curaaaactive%,%sess-curaaaadeleting%,%sess-curaaaactpending%,%sess-ttlempy fwd%,%sess-ttlempyrev%,%sess-tlonlineprepaiderr%,%sess-ttlprepaidinitautherr%,%sess-ttlcrprpattempt%,%sess-ttlcrprpsuccess%,%sess-ttlrcprpattempt%,%sess-ttlrcprpsuccess%,%sess-curmipconn%,%sess-curl2tplacconn%,%sess-curalwayson%,%sess-curbcmcsauth%,%sess-curbcmcsconn%,%sess-curhaipseconn%,%sess-curl2tplacconnecting%,%sess-curpdptypeipconn%,%sess-curpdptypepppconn%,%sess-curprepaid%,%sess-rxpkt-1023%,%sess-rxpkt-127%,%sess-rxpkt-16%,%sess-rxpkt-2047%,%sess-rxpkt-255%,%sess-rxpkt-4095%,%sess-rxpkt-4500%,%sess-rxpkt-511%,%sess-rxpkt-64%,%sess-rxpkt-over4500%,%sess-tltdisconn%,%sess-ttlhandoff%,%sess-tlonlineauthfail%,%sess-tlonlineauthreq%,%sess-tlonlineauthsucc%,%sess-ttlprepaid%,%sess-ttlproxydns-drop%,%sess-ttlproxydns-passthru%,%sess-ttlproxydns-redirect%,%sess-ttlrenewal%,%sess-txpkt-1023%,%sess-txpkt-127%,%sess-txpkt-16%,%sess-txpkt-2047%,%sess-txpkt-255%,%sess-txpkt-4095%,%sess-txpkt-4500%,%sess-txpkt-511%,%sess-txpkt-64%,%sess-txpkt-over4500%,%aaa-tlauthkeepalive%,%aaa-curauthkeepalive%,%aaa-tlacctkeepalive%,%aaa-curacctkeepalive%,%aaa-tlauthkeepalivesuccess%,%aaa-tlauthkeepalivefailure%,%aaa-tlauthkeepalivepurged%,%aaa-tlacctkeepalivesuccess%,%aaa-tlacctkeepalivetimeout%,%aaa-tlacctkeepalivepurged%,%ipsg-total-call-arrived%,%ipsg-total-call-rejected%,%ipsg-total-call-demult%,%ipsg-total-dereg-rep-sent%,%ipsg-cur-active-call%,%ipsg-total-active-serv%,%asngw-cur-active-call%,%asngw-total-sess-setup%,%asngw-retriesexhaust%,%asngw.sfs%,%asngw.tidfail%,%asngw-handoffattempt%,%asngw-handoffdenied%,%asngw-handoffcomp%,%asngw.authsucc%,%asngw-authfailures%
PPP1Sch	PPP1Sch	EMS,PPP1,%date%,%time%,%vpnname%,%vpnid%,%servname%,%init%,%reneg%,%success%,%failed%,%released%,%released-local%,%released-remote%,%lcp-fail-maxretry%,%lcp-fail-option%,%ipcp-fail-maxretry%,%ipcp-fail-option%,%fail-ccp%,%fail-auth%,%entered-lcp%,%entered-auth%,%entered-ipcp%,%reneg-pdsn%,%reneg-mobile%,%reneg-adrmis%,%reneg-other%,%auth-attempt-chap%,%auth-attempt-ppp%,%auth-attempt-mschap%,%auth-success-chap%,%auth-success-pap%,%auth-success-mschap%,%auth-fail-chap%,%auth-fail-pap%,%auth-fail-mschap%,%comp-stac%,%comp-mppc%,%comp-defl%,%rcverr-basfcs%,%rcverr-unknproto%,%rcverr-badaddr%,%rcverr-badctrl%,%comp-vjhdr%,%disc-lcp-remote%,%disc-rp-remote%,%disc-admin%,%disc-idle-timeout%,%disc-abs-timeout%,%disc-ppp-keepalive%,%disc-no-resource%,%disc-misc%,%remote-term%,%misc-fail%

Key	Description	Default Value in Config File
PPP2 Sch	PPP2 Schema	EMS,PPP2,%date%,%time%,%vpname%,%vpnid%,%servname%,%fail-reneg%,%lcp-fail-unknown%,%ipcp-fail-unknown%,%abort-auth%,%rp-disc%,%success-lcp%,%success-auth%,%reneg-rp_handoff%,%reneg-update%,%auth-abort-chap%,%auth-abort-pap%,%auth-abort-mschap%,%sess-skip-auth%,%comp-sess-neg%,%comp-sess-neg-fail%,%disc-rp-local%,%disc-add-flow-fail%,%disc-maxretry-lcp%,%disc-maxretry-ipcp%,%disc-max-setup-time%,%disc-bad-dest-vpn%,%disc-opt-neg-lcp%,%disc-opt-neg-ipcp%,%disc-no-remoteaddr%,%disc-typedetect-fail%,%disc-bad-src-addr%,%disc-remote%,%disc-long-timeout%,%disc-auth-fail%,%lcpecho-req-total%,%lcpecho-req-resent%,%lcpecho-rep-recved%,%lcpecho-timeout%,%recverr-ctrl-field%,%recverr-bad-length%,%in-oct%,%in-ucast%,%in-nucast%,%in-pkt%,%in-discard%,%in-discard-oct%,%out-oct%,%out-ucast%,%out-nucast%,%out-pkt%,%out-discard%,%out-discard-oct%,%num-sessions%,%lcpvse-req-total%,%lcpvse-req-resent%,%lcpvse-rep-recved%,%lcpvse-proto-reject%,%lcpvse-req-maxreach%,%svctype%,%conn-sess-reneg%,%comp-rohchr%,%altppp-connected%,%reneg-rp-handoff%,%auth-attempt-pap%,%auth-attempt-mschap%
MIP FA1 Sch	MIPFA1 Schema	EMS,MIPFA1,%date%,%time%,%vpname%,%vpnid%,%servname%,%advert-send%,%disc-expiry%,%disc-dereg%,%disc-admin%,%auth-attempt%,%auth-success%,%auth-failure%,%recv-total%,%recv-initial%,%recv-renewal%,%recv-dereg%,%accept-total%,%accept-initial%,%accept-renewal%,%accept-dereg%,%denied-total%,%denied-initial%,%denied-renewal%,%denied-dereg%,%discard-total%,%discard-initial%,%discard-renewal%,%discard-dereg%,%relayed-total%,%relayed-initial%,%relayed-renewal%,%relayed-dereg%,%authfail-total%,%authfail-initial%,%authfail-renewal%,%authfail-dereg%,%denied-pdsn-total%,%denied-pdsn-initial%,%denied-pdsn-renewal%,%denied-pdsn-dereg%,%denied-ha-total%,%denied-ha-initial%,%denied-ha-renewal%,%denied-ha-dereg%,%denied-pdsn-unspec%,%denied-pdsn-timeout%,%denied-pdsn-admin%,%denied-pdsn-resource%,%denied-pdsn-mnauth%,%denied-pdsn-haauth%,%denied-pdsn-lifetoolong%,%denied-pdsn-badreq%,%denied-pdsn-badreply%,%denied-pdsn-misssnai%,%denied-pdsn-misshomeagent%,%denied-pdsn-misshomeaddr%,%denied-pdsn-unkchallenge%,%denied-pdsn-missshallenge%,%denied-pdsn-stalechallenge%,%denied-pdsn-mntoodistant%,%denied-pdsn-styleunavail%,%denied-pdsn-hanetunreach%,%denied-pdsn-hahostunreach%
MIP FA2 Sch	MIPFA2 Schema	EMS,MIPFA2,%date%,%time%,%vpname%,%vpnid%,%servname%,%denied-pdsn-haportunreach%,%denied-pdsn-haunreach%,%denied-pdsn-invoa%,%denied-pdsn-encapunavail%,%denied-pdsn-revtununavail%,%denied-pdsn-revtunmand%,%denied-ha-faauth%,%denied-ha-badreq%,%denied-ha-mismatchid%,%denied-ha-simulbind%,%denied-ha-unknownha%,%denied-ha-revtununavail%,%replyrcv-total%,%replyrcv-totalrelayed%,%replyrcv-errors%,%replyrcv-initial%,%replyrcv-initialrelayed%,%replyrcv-renewal%,%replyrcv-renewalrelayed%,%replyrcv-dereg%,%replyrcv-deregrelayed%,%replisent-total%,%replisent-acceptreg%,%replisent-acceptdereg%,%replisent-badreq%,%replisent-lifetoolong%,%replisent-mnauthfail%,%replisent-haauthfail%,%replisent-adminprohib%,%replisent-noresources%,%replisent-revtununavail%,%replisent-revtunmand%,%replisent-senderrors%,%replisent-mntoodistant%,%replisent-invoa%,%replisent-hanetunreach%,%replisent-hahostunreach%,%replisent-haportunreach%,%replisent-haunreach%,%replisent-regtimeout%,%replisent-misssnai%,%replisent-misshomeagent%,%replisent-misshomeaddr%,%replisent-unkchallenge%,%replisent-missshallenge%,%replisent-stalechallenge%,%replisent-badreply%,%reqsent-initial%,%reqsent-initial-resend%,%reqsent-initial-noresend%,%reqsent-renew%,%reqsent-renew-resend%,%reqsent-renew-noresend%,%reqsent-dereg%,%reqsent-dereg-resend%,%reqsent-dereg-noresend%,%denied-pdsn-unkchallenge%,%denied-pdsn-unknowncvse%,%replisent-unspecified%,%replisent-delstyleunavail%,%ttlprepaid%,%curprepaid%,%ttlonlineauthsucc%,%ttlonlineauthfail%,%revoc-sent%,%revoc-retry-sent%,%revoc-ack-recv%,%revoc-timeout%,%revoc-recv%,%revoc-ack-sent%

■ The bs.cfg File

Key	Description	Default Value in Config File
MIP HAS ch	MI PH A Sch ema	EMS,MIPHA,%date%,%time%,%vpnname%,%vpnid%,%servname%,%disconnects%,%expiry%,%dereg%,%adm indrop%,%recv-total%,%recv-initial%,%recv-renew%,%recv-dereg%,%accept-total%,%accept-reg%,%accept- renew%,%accept-dereg%,%denied-total%,%denied-initial%,%denied-renew%,%denied-dereg%,%discard- total%,%reply-total%,%reply-acceptreg%,%reply-acceptdereg%,%reply-denied%,%reply-badreq%,%reply- mismatchid%,%reply-adminprohib%,%reply-unspecerr%,%reply-noresource%,%reply-mnauthfail%,%reply- faauthfail%,%reply-simulbind%,%reply-unknownha%,%reply-revtununavail%,%reply-revtunmand%,%reply- encapunavail%,%reply-senderror%,%farevocation%,%accept-ho%,%denied-ho%,%reply-error%,%num- sessions%,%recv-ho%,%revoc-sent%,%revoc-retry-sent%,%revoc-ack-recv%,%revoc-timeout%,%revoc- recv%,%revoc-ack-sent%,%miscerror%,%auth-attempt%,%auth-failure%,%auth-success%,%auth-real- failure%,%auth-misc-failure%,%reply-unknowncvse%,%reply-cong-drop%,%reply-cong-adminprohib%,%reply- cong-unknownha%,%reply-udp- encapunavail%,%ttlprepaid%,%curprepaid%,%ttlonlineauthsucc%,%ttlonlineauthfail%,%paaa-query- total%,%paaa-query-accept%,%paaa-query-denied%,%paaa-resp-sent%,%paaa-resp-found%,%paaa-resp- notfound%,%paaa-resp-poolover%,%paaa-resp-misc%,%ipsec-esp-txpackets%,%ipsec-esp-txbytes%,%ipsec-ah- txpackets%,%ipsec-ah-txbytes%,%ipsec-error-txpackets%,%ipsec-error-txbytes%,%ipsec-esp-rxpackets%,%ipsec- esp-rxbytes%,%ipsec-ah-rxpackets%,%ipsec-ah-rxbytes%,%ipsec-error-packets%,%ipsec-error-bytes%,%ipsec- replay-packets%,%ipsec-replay-bytes%,%ipsec-decode-packets%,%ipsec-decode-bytes%,%ipsec-auth- packets%,%ipsec-auth-bytes%,%ipsec-tooshort-packets%,%ipsec-tooshort-bytes%,%ipsec-dpdreq-sent%,%ipsec- dpdreq-recv%,%ipsec-dpdreply-sent%,%ipsec-dpdreply-recv%,%ipsec-dpdtimeout%,%ipsec- dpddisconn%,%ipsec-dpdrekey%
MIP HA2 Sch	MI PH A2 Sch ema	EMS,MIPHA2,%date%,%time%,%vpnname%,%vpnid%,%servname%,%ipsec-nattkeepalive-sent%,%ipsec- nattkeepalive-recv%,%ipsec-ike-udpflows%,%ipsec-ike-cookieflows%,%ipsec-ike-txpackets%,%ipsec-ike- rxpackets%,%ipsec-ike-reqrecv%,%ipsec-ike-udpflowpackets%,%ipsec-ike-cookieflowpackets%,%ipsec-cur- tun%,%ipsec-cur-tunestablished%,%ipsec-ike-fails%,%ipsec-ttl-tun%,%ipsec-ttl-tunestablished%,%ipsec-call-req- rej%

Key	Description	Default Value in Config File
RP Schema	RP Sch	EMS,RP,%date%,%time%,%vpnname%,%vpnid%,%servname%,%recv-total%,%accept-total%,%denied-total%,%discard-total%,%accept-initial%,%accept-intrapdsn%,%accept-interpdsn%,%denied-initial%,%accept-renew%,%denied-renew%,%accept-dereg%,%denied-dereg%,%send-error%,%hash-error%,%decode-error%,%unhandled%,%seqerror%,%deny-unspec%,%deny-adminprohib%,%deny-noresource%,%deny-auth%,%deny-idmismatch%,%deny-badrequest%,%deny-unknownpdsn%,%deny-revtununavail%,%deny-revtunreq%,%deny-unrecogvend%,%upd-total%,%upd-accept%,%upd-denied%,%upd-unack%,%upd-trans%,%upd-retrans%,%upd-received%,%upd-discard%,%upd-senderror%,%upd-upltrinit%,%upd-other%,%upd-handoff%,%upddeny-unspec%,%upddeny-adminprohib%,%upddeny-auth%,%upddeny-idmismatch%,%upddeny-badrequest%,%sec-violations%,%sec-badauth%,%sec-badid%,%sec-badspi%,%sec-mnhaauth%,%sec-regupdate%,%disc-absent%,%disc-nomem%,%disc-malform%,%disc-authfail%,%disc-bounce%,%disc-inputq%,%disc-mismatchid%,%disc-invpklen%,%disc-misc%,%reply-total%,%recv-initial%,%accept-active-intrapdsn%,%accept-dormant-intrapdsn%,%recv-renew%,%active-start-renew%,%active-stop-renew%,%recv-dereg%,%active-stop-dereg%,%upd-ttlnoetrans%,%upd-ack-received%,%num-sessions%,%deny-sessclosed%,%deny-cong-drop%,%deny-cong-adminprohib%,%deny-cong-unknownpdsn%,%sess-num-transmitted%,%sess-accepted%,%sess-denied%,%sess-not-acknowledged%,%sess-initial-update%,%sess-update-retransmitted%,%sess-update-ack-received%,%sess-update-ack-discarded%,%sess-update-send-error%,%sess-always-on-indication%,%sess-reason-unspecified%,%sess-PDSN-auth-fail%,%sess-ID-mismatch%,%sess-poorly-formed-update%,%sess-para-not-update%,%sess-absent%,%sess-no-memory%,%sess-malformed%,%sess-auth-fail%,%sess-ID-bounce-error%,%sess-input-Q-exceeded%,%sess-mismatched-ID%,%sess-invalid-packet-length%,%sess-misc-reasons%,%sess-gre-packet-sent-sdb%,%sess-gre-byte-sent-sdb%,%ttlprepaid%,%curprepaid%,%ttlonlineauthsucc%,%ttlonlineauthfail%,%discard-initial%,%recv-initial-setupstart%,%accept-initial-setupstart%,%denied-initial-setupstart%,%discard-initial-setupstart%,%discard-renew%,%recv-renew-noairlink%,%accept-renew-noairlink%,%denied-renew-noairlink%,%discard-renew-noairlink%,%recv-renew-activestart%,%accept-renew-activestart%,%denied-renew-activestart%,%discard-renew-activestart%,%recv-renew-activestop%,%accept-renew-activestop%,%denied-renew-activestop%,%discard-renew-activestop%,%discard-dereg%,%recv-dereg-noactivestop%,%accept-dereg-noactivestop%,%denied-dereg-noactivestop%,%discard-dereg-noactivestop%,%recv-dereg-activestop%,%accept-dereg-activestop%,%denied-dereg-activestop%,%discard-dereg-activestop%,%recv-intrapdsn-activeanidhandoff%,%accept-intrapdsn-activeanidhandoff%,%denied-intrapdsn-activeanidhandoff%,%discard-intrapdsn-activeanidhandoff%,%recv-intrapdsn-dormantanidhandoff%,%accept-intrapdsn-dormantanidhandoff%,%denied-intrapdsn-dormantanidhandoff%,%discard-intrapdsn-dormantanidhandoff%,%recv-interpdsn-activemeianidhandoff%,%accept-interpdsn-activemeianidhandoff%,%denied-interpdsn-activemeianidhandoff%,%discard-interpdsn-activemeianidhandoff%,%rx-pkt-xoff%,%rx-pkt-xon%,%xontoxoff%,%pkt-dropped-xoff%,%bytes-dropped-xoff%

Key	Description	Default Value in Config File
RPSch2	RP2 Schema	EMS,RP2,%date%,%time%,%vpnname%,%vpnid%,%servname%,%a10-cursetup%,%a10-ttlreleased%,%a10-ttlsetup%,%a10aux-cursetup%,%a10aux-ttlreleased%,%a10aux-ttlsetup%,%a10main-cursetup%,%a10main-ttlreleased%,%a10main-ttlsetup%,%deny-badrequest-alractive%,%deny-badrequest-alrdorm%,%deny-badrequest-authextn%,%deny-badrequest-fieldlen%,%deny-badrequest-flags%,%deny-badrequest-hoanonzero%,%deny-badrequest-miscoaaddr%,%deny-badrequest-other%,%deny-badrequest-pkttoolong%,%deny-badrequest-pkttooshort%,%deny-badrequest-setupabsent%,%deny-badrequest-sse%,%deny-badrequest-unkextn%,%deny-badrequest-vse%,%deny-noresource-al1mgrrej%,%deny-noresource-inputq%,%deny-noresource-nomem%,%deny-noresource-nosessmgr%,%deny-noresource-policy%,%deny-noresource-sessmgrrej%,%deny-noresource-sessmgrretried%,%deny-unspec-crphandoff%,%deny-unspec-intrahandoff%,%deny-unspec-lifezero%,%deny-unspec-noairlink%,%deny-unspec-notready%,%deny-unspec-nullpkt%,%reva-rrq-accept%,%reva-rrq-denied%,%reva-rrq-recv%,%reva-rrq-reply%,%rrqdiscard-adminprohib%,%rrqdiscard-authfail%,%rrqdiscard-bounce%,%rrqdiscard-grekey%,%rrqdiscard-inputq%,%rrqdiscard-invlcn%,%rrqdiscard-maxsess%,%rrqdiscard-misc%,%rrqdiscard-nomem%,%rrqdiscard-nosessmgr%,%rrqdiscard-overload%,%rrqdiscard-smgrdead%,%rrqdiscard-smgrnotready%,%rrqdiscard-unpkpsn%,%sess-currevasetup%,%sess-cursetup%,%sess-release-dereg%,%sess-release-expiry%,%sess-release-grekey%,%sess-release-other%,%sess-release-pcfmonfail%,%sess-release-ppplayer%,%sess-ttlreleased%,%sess-ttlrevasetup%,%sess-ttlsetup%,%sess-updackdisc-pktnothand%,%sess-updackdisc-sessdisc%,%sess-upddenied-adminprohib%,%sess-upddenied-handoff%,%sess-upddenied-idnotsupp%,%sess-upddenied-noresource%,%sess-updreason-alwayson%,%sess-updreason-qosinfo%,%sess-updreason-qosoptrig%,%sess-updreason-qostftviol%,%sess-updreason-qostrafpol%,%sess-updreason-qostrafviol%,%upd-discard-unhpkt%,%upd-discard-unpkpf%,%upd-lifetime%,%upd-smgrexit%
RPSch3	RP3 Schema	EMS,RP3,%date%,%time%,%vpnname%,%vpnid%,%servname%,%sess-ttlrevareleased%,%sess-ttlrevadowngrade%,%deny-bsninfo%,%upd-uplyrinit%,%upd-discard-absent%,%upd-discard-nomem%,%upd-discard-malform%,%upd-discard-authfail%,%upd-discard-bounce%,%upd-discard-inputq%,%upd-discard-mismatchid%,%upd-discard-invpktnlen%,%upd-discard-misc%,%sess-pdsn-auth-fail%,%sess-id-mismatch%,%sess-release-purged%
GTPC1Sch	GT PC1 Schema	EMS,GTPC1,%date%,%time%,%vpnname%,%vpnid%,%servname%,%setup-total%,%setup-ip%,%setup-ppp%,%released-total%,%cpc-total%,%cpc-v0%,%cpc-v1%,%cpc-sec%,%cpc-retrans%,%cpc-accept%,%cpc-deny%,%cpc-discard%,%upc-rx%,%upc-rx-accept%,%upc-rx-deny%,%upc-rx-discard%,%upc-tx%,%upc-tx-accept%,%upc-tx-deny%,%dpc-rx%,%dpc-rx-accept%,%dpc-rx-deny%,%dpc-rx-discard%,%dpc-tx%,%dpc-tx-accept%,%dpc-tx-deny%,%cpc-aa%,%cpc-aa-accept%,%cpc-aa-deny%,%cpc-aa-discard%,%dpc-aa-rx%,%dpc-aa-rx-accept%,%dpc-aa-rx-deny%,%dpc-aa-rx-discard%,%dpc-aa-tx%,%dpc-aa-tx-accept%,%dpc-aa-tx-deny%,%err-ind-rx%,%err-ind-tx%,%cpc-noresource%,%cpc-addr-occupied%,%cpc-nomem%,%cpc-missing-apn%,%cpc-unknown-pdp%,%cpc-auth-fail%,%cpc-sys-fail%,%cpc-sem-tft%

Key	Description	Default Value in Config File
GTP C2Schema	GT PC 2 Schema	EMS,GTPC2,%date%,%time%,%vpnname%,%vpnid%,%servname%,%cpc-syn-tft%,%cpc-sem-pktfilter%,%cpc-syn-pktfilter%,%cpc-ie-err%,%cpc-ie-missing%,%cpc-opt-ie-err%,%cpc-malformed%,%cpc-version%,%disc-sgsn%,%disc-path-fail%,%disc-smgr-dead%,%disc-admin%,%disc-other%,%disc-teardown%,%disc-idle%,%disc-absolute%,%disc-src-addr%,%disc-flow-add%,%disc-dhcp-renew-fail%,%disc-long-durn%,%disc-aborted%,%disc-apn-rmvd%,%pdu-notif%,%pdu-notif-accept%,%pdu-notif-deny%,%pdu-notif-rej%,%pdu-notif-rej-accept%,%pdu-notif-rej-deny%,%pdu-notif-rej-discard%,%sri-req%,%sri-accept%,%sri-deny%,%fail-rep%,%fail-rep-accept%,%fail-rep-deny%,%note-ms-gprs%,%note-ms-gprs-accept%,%note-ms-gprs-deny%,%note-ms-gprs-discard%,%num-bytes-in%,%num-pkts-in%,%num-bytes-out%,%num-pkts-out%,%cpc-srv-not-supply%,%gtpu-echo-req-rx%,%gtpu-echo-req-tx%,%gtpu-echo-rsp-tx%,%gtpu-echo-rsp-rx%,%ctrl-num-bytes-in%,%ctrl-num-pkts-in%,%ctrl-num-bytes-out%,%ctrl-num-pkts-out%,%echo-req-rx%,%echo-req-tx%,%echo-rsp-tx%,%echo-rsp-rx%,%setup-current%,%current-ip%,%current-ppp%,%current-ipv6%,%current-ntwkinitd%,%setup-ipv6%,%setup-sgsn%,%setup-ggsn%,%qosconv-bytes-in%,%qosconv-pkts-in%,%qosconv-bytes-out%,%qosconv-pkts-out%,%qosstrm-bytes-in%,%qosstrm-pkts-in%,%qosstrm-bytes-out%,%qosstrm-pkts-out%,%qosint1-bytes-in%,%qosint1-pkts-in%,%qosint1-bytes-out%,%qosint1-pkts-out%,%qosint2-bytes-in%,%qosint2-pkts-in%,%qosint2-bytes-out%,%qosint2-pkts-out%,%qosint3-bytes-in%,%qosint3-pkts-in%,%qosint3-bytes-out%,%qosint3-pkts-out%,%qosback-bytes-in%,%qosback-pkts-in%,%qosback-bytes-out%,%qosback-pkts-out%,%dyn-ipv4-attempt%,%dyn-ipv6-attempt%,%dyn-ppp-attempt%,%dyn-ipv4-success%,%dyn-ipv6-success%,%cpc-no-apn-subscription%
GTP PSch	GT PP Schema	EMS,GTPP,%date%,%time%,%vpnname%,%vpnid%,%echo-req-rx%,%echo-req-tx%,%echo-rsp-rx%,%echo-rsp-tx%,%redir-rcvd%,%redir-rsp%,%node-alive%,%node-alive-rsp%,%data-rec-trans%,%dup-data-rec-trans%,%send-data-rec%,%rel-data-rec%,%cancel-data-rec%,%data-rec-trans-rsp%,%delete-node%,%node-addr%,%req-accept%,%req-not-fulfil%,%req-malform%,%version-not-supply%,%serv-not-supply%,%mand-ie-err%,%mand-ie-miss%,%opt-ie-err%,%dup-already-fulfil%,%already-fulfil%,%no-resource%,%sys-fail%,%normal-close%,%abnormal-close%,%vol-limit-close%,%time-limit-close%,%open-req%,%aaa-acct-arch%,%rdir-sys-fail%,%rdir-txbuf-full%,%rdir-rxbuf-full%,%other-node-dn%,%self-node-dn%,%rdir-no-res%,%rdir-serv-no%,%rdir-version-not-supply%,%rdir-mand-ie-miss%,%rdir-mand-ie-err%,%rdir-opt-ie-err%,%rdir-malformed%,%rdir-rsp-sys-fail%,%gss-echo-req%,%gss-echo-rsp%,%gss-gtpp-req%,%gss-gtpp-req-ret%,%gss-gtpp-rsp%,%gss-gtpp-rsp-failed%,%gss-gcdr-req%,%gss-gcdr-req-ret%,%gss-gcdr-rsp%,%gss-gcdr-rsp-failed%,%gss-aaaproxy-rec-req%,%gss-aaaproxy-rec-ret%,%gss-aaaproxy-rec-rsp%,%gss-aaaproxy-rec-rsp-failed%,%gss-aaamgr-rec-req%,%gss-aaamgr-rec-ret%,%gss-aaamgr-rec-rsp%,%gss-aaamgr-rec-rsp-failed%,%gss-update-cgf-req%,%gss-update-cgf-req-ret%,%gss-update-cgf-rsp%,%gss-update-cgf-rsp-failed%,%gss-clear-db-req%,%gss-clear-db-req-ret%,%gss-clear-db-rsp%,%gss-clear-db-rsp-failed%,%gss-update-req%,%gss-invalid-req-rcvd%
IPPoolSchema	IPPool Schema	EMS,IPPOOL,%date%,%time%,%vpnname%,%vpnid%,%name%,%used%,%hold%,%release%,%free%,%type%,%priority%,%state%,%startaddr%,%groupname%

Key	Description	Default Value in Config File
APN Sch	APN Schema	EMS,APN,%date%,%time%,%vpnname%,%vpnid%,%apn%,%uplnk-bytes%,%dnlnk-bytes%,%uplnk-pkts%,%dnlnk-pkts%,%uplnk-drop%,%dnlnk-drop%,%bad-hdr%,%ttl-excd%,%frag-sent%,%frag-fail%,%inacldrop%,%outacl-drop%,%bad-src-addr%,%addr-stat%,%addr-lpool%,%addr-rad%,%addr-dhcp%,%addr-dhcp-rlly%,%addr-no-alloc%,%sess-curr%,%sess-curr-all%,%sess-tot%,%sess-tot-all%,%uplnk-bytes-drop%,%dnlnk-bytes-drop%,%data-fromuseravg-bps%,%data-touseravg-bps%,%data-fromusersust-bps%,%data-tousersust-bps%,%data-fromuseravg-pps%,%data-touseravg-pps%,%data-fromusersust-pps%,%data-tousersust-pps%,%qosconv-pkts-uplnk%,%qosconv-pkts-dnlnk%,%qosstrm-pkts-uplnk%,%qosstrm-pkts-dnlnk%,%qosint1-pkts-uplnk%,%qosint1-pkts-dnlnk%,%qosint2-pkts-uplnk%,%qosint2-pkts-dnlnk%,%qosint3-pkts-uplnk%,%qosint3-pkts-dnlnk%,%qosint-pkts-uplnk%,%qosint-pkts-dnlnk%,%qosback-pkts-uplnk%,%qosback-pkts-dnlnk%,%att-pdp-ctxt%,%att-deact-pdp-ggsn%,%succ-deact-pdp-ggsn%,%att-deact-pdp-ms%,%succ-deact-pdp-ms%,%dyn-ipv4-attempt%,%dyn-ipv6-attempt%,%dyn-ipv4-success%,%dyn-ipv6-success%,%auth-req-sent%,%auth-acc-rcvd%,%auth-timeout%,%acc-req-sent%,%acc-rsp-rcvd%,%acc-req-timeout%
LAC 1Sch	LAC Schema 1	EMS,LAC1,%date%,%time%,%vpnname%,%vpnid%,%servname%,%tun-conn-attempt%,%tun-conn-success%,%tun-conn-fail%,%tun-conn-curactive%,%sess-attempts%,%sess-successful%,%sess-failed%,%sess-curactive%,%sess-intrapdsnho-attempt%,%sess-intrapdsnho-success%,%sess-intrapdsnho-failed%,%sess-interpdsnho-attempt%,%recv-err-malformed%,%recv-err-ctrlfield%,%recv-err-pktlen%,%recv-err-avplen%,%recv-err-protover%,%recv-err-md5%,%recv-err-invattr%,%recv-err-unkattr%,%recv-err-invsessid%,%recv-err-invstate%,%recv-err-unkmsg%,%recv-err-unmatchpktlen%,%recv-err-invtunid%,%tun-genclear%,%tun-ctrlconnexists%,%tun-unauth%,%tun-badproto%,%tun-reqshutdown%,%tun-statemacherr%,%tun-badlen%,%tun-oor%,%tun-noresource%,%tun-vendspec%,%tun-tryanotherlns%,%tun-unkavp%,%tun-ipsecdisc%,%tun-ipsecfail%,%tun-license%,%tun-newcallpoldisc%,%tun-maxretry%,%tun-syslimit%,%tun-miscerr%,%sess-nogeneral%,%sess-admin%,%sess-lossofcarr%
LAC 2Sch	LAC Schema 2	EMS,LAC2,%date%,%time%,%vpnname%,%vpnid%,%servname%,%sess-remoteadmin%,%sess-nofactemp%,%sess-nofacperm%,%sess-invdest%,%sess-nocarrier%,%sess-busysig%,%sess-nodialtime%,%sess-lactimeout%,%sess-noframing%,%sess-noctrlconn%,%sess-badlen%,%sess-oor%,%sess-noresource%,%sess-invsessid%,%sess-vendspec%,%sess-tryanotherlns%,%sess-unkavp%,%sess-maxtunnel%,%sess-ipsecfail%,%sess-ipsecdisc%,%sess-newcallpoldisc%,%sess-license%,%sess-servmismatch%,%sess-miscerr%
CLOSEDRP1 Sch	ClosedRP Schema 1	EMS,CLOSEDRP1,%date%,%time%,%vpnname%,%vpnid%,%servname%,%tun-conn-attempt%,%tun-conn-success%,%tun-conn-fail%,%tun-conn-curactive%,%sess-attempts%,%sess-successful%,%sess-failed%,%sess-curactive%,%sess-intrapdsnho-attempt%,%sess-intrapdsnho-success%,%sess-intrapdsnho-failed%,%sess-interpdsnho-attempt%,%recv-err-malformed%,%recv-err-ctrlfield%,%recv-err-pktlen%,%recv-err-avplen%,%recv-err-protover%,%recv-err-md5%,%recv-err-invattr%,%recv-err-unkattr%,%recv-err-invsessid%,%recv-err-invstate%,%recv-err-unkmsg%,%recv-err-unmatchpktlen%,%recv-err-invtunid%,%tun-genclear%,%tun-ctrlconnexists%,%tun-unauth%,%tun-badproto%,%tun-reqshutdown%,%tun-statemacherr%,%tun-badlen%,%tun-oor%,%tun-noresource%,%tun-vendspec%,%tun-tryanotherlns%,%tun-unkavp%,%tun-ipsecdisc%,%tun-ipsecfail%,%tun-license%,%tun-newcallpoldisc%,%tun-maxretry%,%tun-syslimit%,%tun-miscerr%,%sess-nogeneral%,%sess-admin%,%sess-lossofcarr%
CLOSEDRP2 Sch	ClosedRP Schema 2	EMS,CLOSEDRP2,%date%,%time%,%vpnname%,%vpnid%,%servname%,%sess-remoteadmin%,%sess-nofactemp%,%sess-nofacperm%,%sess-invdest%,%sess-nocarrier%,%sess-busysig%,%sess-nodialtime%,%sess-lactimeout%,%sess-noframing%,%sess-noctrlconn%,%sess-badlen%,%sess-oor%,%sess-noresource%,%sess-invsessid%,%sess-vendspec%,%sess-tryanotherlns%,%sess-unkavp%,%sess-maxtunnel%,%sess-ipsecfail%,%sess-ipsecdisc%,%sess-newcallpoldisc%,%sess-license%,%sess-servmismatch%,%sess-miscerr%,%sess-hocomplete%,%sess-invho%,%sess-duplsess%,%ttlprepaid%,%curprepaid%,%ttlonlineauthsucc%,%ttlonlineauthfail%

Key	Description	Default Value in Config File
RADIUS	RADIUS Schema	EMS,RADIUS,%date%,%time%,%vpnname%,%vpnid%,%servertype%,%ipaddr%,%auth-req-sent%,%auth-req-sentwdmu%,%auth-req-pending%,%auth-req-retried%,%auth-req-retriedwdmu%,%auth-chal-rcvd%,%auth-acc-rcvd%,%auth-rej-rcvd%,%auth-rej-rcvdwdmu%,%auth-timeout%,%auth-cons-fail%,%auth-rsp-badauth%,%auth-rsp-malformed%,%auth-rsp-malformedattr%,%auth-rsp-unktype%,%auth-rsp-dropped%,%auth-rsp-roundtripusec%,%probe-issued%,%probe-success%,%probe-failed%,%probe-roundtriptimeusec%,%acc-req-sent%,%acc-req-pending%,%acc-req-retried%,%acc-rsp-rcvd%,%acc-req-timeout%,%acc-req-cons-fail%,%acc-rsp-badresp%,%acc-rsp-malformed%,%acc-rsp-unktype%,%acc-rsp-dropped%,%acc-rsp-roundtripusec%,%port%,%acc-start-sent%,%acc-stop-sent%,%acc-interim-sent%,%acc-start-retries%,%acc-stop-retries%,%acc-interim-retries%,%group%,%acc-ttl-g1%,%acc-ttl-g2%,%online-acc-req-sent%,%online-acc-req-pending%,%online-acc-req-retried%,%online-acc-rsp-rcvd%,%online-acc-rej-rcvd%,%online-acc-req-timeout%,%online-acc-rsp-badauth%,%online-acc-rsp-malformed%,%online-acc-rsp-malformedattr%,%online-acc-rsp-unktype%,%online-acc-badmsgauth%,%online-acc-nomsgauth%,%nasipaddr%,%keepalive-auth-req-sent%,%keepalive-auth-retried%,%keepalive-auth-acc-rcvd%,%keepalive-auth-timeout%,%keepalive-auth-rej-rcvd%,%keepalive-acct-req-sent%,%keepalive-acct-retried%,%keepalive-acct-success%,%keepalive-acct-timeout%,%keepalive-acct-rsp-badauth%,%cons-fail%,%keepalive-auth-rsp-badauth%,%keepalive-auth-rsp-malformed%,%keepalive-auth-rsp-malformedattr%,%keepalive-auth-rsp-unktype%,%keepalive-auth-rsp-dropped%,%acc-on-sent%,%acc-off-sent%,%acc-on-retries%,%acc-off-retries%,%keepalive-acct-rsp-malformed%,%keepalive-acct-rsp-unktype%,%keepalive-acct-rsp-dropped%
MISC	Miscellaneous Schema	%ipaddr%,%host%,%uptime%,%time%,%localdate%,%localtime%,%localtz%,%time2%,%localtime2%
MISC	New Miscellaneous Schema	EMS,MISC,%date%,%time%,%ipaddr%,%host%,%uptime%,%localdate%,%localtime%,%localtz%,%time2%,%localtime2%,%swversion%,%swbuild%,%localtzooffset%

Key	Description	Default Value in Config File
ECS 1Sch	EC S1 Sch ema	EMS,ECS1,%date%,%time%,%ecs-subscribers%,%ecs-subscribers-cur%,%gcdrs-generated%,%edrs-generated%,%udrs-generated%,%ip-flows%,%ip-flows-cur%,%ip-uplk-bytes%,%ip-dwnlk-bytes%,%ip-uplk-pkts%,%ip-dwnlk-pkts%,%ip-uplk-pkts-frag%,%ip-dwnlk-pkts-frag%,%ip-uplk-bytes-frag%,%ip-dwnlk-bytes-frag%,%udp-flows%,%udp-flows-cur%,%udp-uplk-bytes%,%udp-dwnlk-bytes%,%udp-uplk-pkts%,%udp-dwnlk-pkts%,%udp-inv-pkts%,%tcp-flows%,%tcp-flows-cur%,%tcp-uplk-bytes%,%tcp-dwnlk-bytes%,%tcp-uplk-pkts%,%tcp-dwnlk-pkts%,%tcp-uplk-bytes-retr%,%tcp-dwnlk-bytes-retr%,%tcp-uplk-pkts-retr%,%tcp-dwnlk-pkts-retr%,%tcp-uplk-pkts-ooo-analyzd%,%tcp-dwnlk-pkts-ooo-analyzd%,%tcp-uplk-pkts-ooo-fail%,%tcp-dwnlk-pkts-ooo-fail%,%tcp-uplk-pkts-ooo-retr%,%tcp-dwnlk-pkts-ooo-retr%,%icmp-flows%,%icmp-flows-cur%,%icmp-uplk-bytes%,%icmp-dwnlk-bytes%,%icmp-uplk-pkts%,%icmp-dwnlk-pkts%,%icmp-ech-req%,%icmp-ech-rep%,%icmp-dst-unrch%,%icmp-redir%,%icmp-tm-excd%,%icmp-trace-route%,%icmp-oth%,%http-flows%,%http-flows-cur%,%http-uplk-bytes%,%http-dwnlk-bytes%,%http-uplk-pkts%,%http-dwnlk-pkts%,%http-uplk-bytes-retr%,%http-dwnlk-bytes-retr%,%http-uplk-pkts-retr%,%http-dwnlk-pkts-retr%,%http-req-succ%,%http-req-fail%,%http-get-req%,%http-post-req%,%http-connect-req%,%http-inv-pkts%,%https-flows%,%https-flows-cur%,%https-uplk-bytes%,%https-dwnlk-bytes%,%https-uplk-pkts%,%https-dwnlk-pkts-retr%,%https-uplk-bytes-retr%,%https-dwnlk-pkts-retr%,%https-dwnlk-pkts-retr%,%wtp-trans%,%wtp-cls-zero%,%wtp-cls-one%,%wtp-cls-two%,%wtp-uplk-bytes%,%wtp-dwnlk-bytes%,%wtp-uplk-pkts%,%wtp-dwnlk-pkts%,%wtp-uplk-bytes-retr%,%wtp-dwnlk-bytes-retr%,%wtp-uplk-pkts-retr%,%wtp-dwnlk-pkts-retr%,%wtp-inv-pkts%,%wtp-invk-tcl-zero%,%wtp-invk-tcl-one%,%wtp-invk-tcl-two%,%wtp-invk-tid-new%,%wtp-rslt-pkts%,%wtp-ack-to-resp%,%wtp-ack-to-init%,%wtp-abrt-to-resp%,%wtp-abrt-to-init%,%wtp-seg-inv%,%wtp-seg-rslt%,%wtp-neg-ack%,%wtp-tid-vrf%,%wtp-noninit-inv%,%wtp-unk-pdu%,%wsp-flows%,%wsp-flows-cur%,%wsp-co-conn%,%wsp-cl-conn%,%wsp-uplk-bytes%,%wsp-dwnlk-bytes%,%wsp-uplk-pkts%,%wsp-dwnlk-pkts%,%wsp-uplk-bytes-retr%,%wsp-dwnlk-bytes-retr%,%wsp-uplk-pkts-retr%,%wsp-dwnlk-pkts-retr%,%wsp-co-req-succ%,%wsp-co-req-fail%,%wsp-cl-req-succ%,%wsp-cl-req-fail%,%wsp-conn-pdu%,%wsp-conn-rep%,%wsp-redir%,%wsp-disc%,%wsp-susp%,%wsp-resm%,%wsp-opt%,%wsp-head%,%wsp-del%,%wsp-trace%,%wsp-reply%,%wsp-put%,%wsp-get%,%wsp-push%,%wsp-conf-push%,%wsp-post%,%wsp-data-frag%,%wsp-rsrvd%,%wsp-inv-pkts%,%mms-send%,%mms-send-succ%,%mms-send-fail%,%mms-retrv%,%mms-retrv-succ%,%mms-retrv-fail%,%mms-uplk-bytes%,%mms-dwnlk-bytes%,%mms-uplk-pkts%,%mms-dwnlk-pkts%,%mms-uplk-bytes-retr%,%mms-dwnlk-bytes-retr%,%mms-uplk-pkts-retr%,%mms-dwnlk-pkts-retr%,%mms-snd-req%,%mms-snd-conf%,%mms-ntf-ind%,%mms-ntf-ind-imm%,%mms-ntf-ind-del%,%mms-ntf-rsp%,%mms-retrv-conf%,%mms-ack-ind%,%mms-delvry-ind%,%mms-unk-pdu%,%mms-inv-pkts%,%sip-flows%,%sip-flows-cur%,%sip-calls%,%sip-uplk-bytes%,%sip-dwnlk-bytes%,%sip-uplk-pkts%,%sip-dwnlk-pkts%,%sip-uplk-bytes-retr%,%sip-dwnlk-bytes-retr%,%sip-uplk-pkts-retr%,%sip-dwnlk-pkts-retr%,%sip-invite%,%sip-bye%,%sip-ack%,%sip-cancel%,%sip-register%,%sip-inv-pkts%,%rtsp-flows%,%rtsp-flows-cur%,%rtsp-sess%,%rtsp-uplk-bytes%,%rtsp-dwnlk-bytes%,%rtsp-uplk-pkts%,%rtsp-dwnlk-pkts%,%rtsp-uplk-bytes-retr%,%rtsp-dwnlk-bytes-retr%,%rtsp-uplk-pkts-retr%,%rtsp-dwnlk-pkts-retr%,%rtsp-play%,%rtsp-setup%,%rtsp-pause%,%rtsp-record%,%rtsp-option%,%rtsp-redir%,%rtsp-desc%,%rtsp-announ%,%rtsp-trdwn%,%rtsp-get-param%,%rtsp-set-param%,%rtsp-inv-pkts%

Key	Description	Default Value in Config File
ECS2Sch	EC S2 Schema	EMS,ECS2,%date%,%time%,%rtp-flows%,%rtp-flows-cur%,%rtp-uplk-bytes%,%rtp-dwnlk-bytes%,%rtp-uplk-pkts%,%rtp-dwnlk-pkts%,%ftp-flows%,%ftp-flows-cur%,%ftp-uplk-bytes%,%ftp-dwnlk-bytes%,%ftp-uplk-pkts%,%ftp-dwnlk-pkts%,%ftp-retr%,%ftp-stor%,%ftp-inv-pkts%,%smtp-flows%,%smtp-flows-cur%,%smtp-uplk-bytes%,%smtp-dwnlk-bytes%,%smtp-uplk-pkts%,%smtp-dwnlk-pkts%,%smtp-uplk-bytes-retr%,%smtp-dwnlk-bytes-retr%,%smtp-uplk-pkts-retr%,%smtp-dwnlk-pkts-retr%,%smtp-unk-cmd%,%smtp-unk-resp%,%smtp-req-succ%,%smtp-req-fail%,%smtp-helo%,%smtp-ehlo%,%smtp-mail-firm%,%smtp-rcpt-to%,%smtp-data%,%smtp-bdat%,%smtp-vrfy%,%smtp-expn%,%smtp-noop%,%smtp-rset%,%smtp-quit%,%smtp-inv-pkts%,%pop3-flows%,%pop3-flows-cur%,%pop3-uplk-bytes%,%pop3-dwnlk-bytes%,%pop3-uplk-pkts%,%pop3-dwnlk-pkts%,%pop3-uplk-bytes-retr%,%pop3-dwnlk-bytes-retr%,%pop3-uplk-pkts-retr%,%pop3-dwnlk-pkts-retr%,%pop3-retr%,%pop3-retr-succ%,%pop3-list%,%pop3-list-succ%,%pop3-inv-pkts%,%imap-uplk-bytes%,%imap-dwnlk-bytes%,%imap-uplk-pkts%,%imap-dwnlk-pkts%,%imap-uplk-bytes-retr%,%imap-dwnlk-bytes-retr%,%imap-uplk-pkts-retr%,%imap-dwnlk-pkts-retr%,%imap-req-succ%,%imap-req-fail%,%imap-reply-untag%,%imap-reply-commcont%,%imap-unk-command%,%imap-unk-reply%,%p2p-flows%,%p2p-flows-cur%,%p2p-skype-uplnk-bytes%,%p2p-skype-dwlnk-bytes%,%p2p-skype-uplnk-pkts%,%p2p-skype-dwlnk-pkts%,%p2p-bittorrent-uplnk-bytes%,%p2p-bittorrent-dwlnk-bytes%,%p2p-bittorrent-uplnk-pkts%,%p2p-bittorrent-dwlnk-pkts%,%p2p-edonkey-uplnk-bytes%,%p2p-edonkey-dwlnk-bytes%,%p2p-edonkey-uplnk-pkts%,%p2p-edonkey-dwlnk-pkts%,%p2p-msn-uplnk-bytes%,%p2p-msn-dwlnk-bytes%,%p2p-msn-uplnk-pkts%,%p2p-msn-dwlnk-pkts%,%p2p-yahoo-uplnk-bytes%,%p2p-yahoo-dwlnk-bytes%,%p2p-yahoo-uplnk-pkts%,%p2p-yahoo-dwlnk-pkts%
ECS3Sch	EC S3 Schema	EMS,ECS3,%date%,%time%,%p2p-orb-uplnk-bytes%,%p2p-orb-dwlnk-bytes%,%p2p-orb-uplnk-pkts%,%p2p-orb-dwlnk-pkts%,%p2p-winy-uplnk-bytes%,%p2p-winy-dwlnk-bytes%,%p2p-winy-uplnk-pkts%,%p2p-winy-dwlnk-pkts%,%p2p-slingbox-uplnk-bytes%,%p2p-slingbox-dwlnk-bytes%,%p2p-slingbox-uplnk-pkts%,%p2p-slingbox-dwlnk-pkts%,%p2p-fasttrack-uplnk-bytes%,%p2p-fasttrack-dwlnk-bytes%,%p2p-fasttrack-uplnk-pkts%,%p2p-fasttrack-dwlnk-pkts%,%p2p-gnutella-uplnk-bytes%,%p2p-gnutella-dwlnk-bytes%,%p2p-gnutella-uplnk-pkts%,%p2p-gnutella-dwlnk-pkts%,%p2p-jabber-uplnk-bytes%,%p2p-jabber-dwlnk-bytes%,%p2p-jabber-uplnk-pkts%,%p2p-jabber-dwlnk-pkts%,%ecs-ttlsuccess%,%ecs-ttlfail%,%ecs-curactive%,%ecs-15peak-curactive%,%ecs-ruleshit%,%ecs-ttldlinkbytes%,%ecs-ttlulinkbytes%,%ecs-ttldlinkpackets%,%ecs-ttlulinkpackets%,%ecs-ttlflowconn%,%ecs-ttlflowdisc%,%ecs-curflow%,%ecs-15peak-curflow%,%ecs-15min-usage-flowall%,%dns-dwnlk-bytes%,%dns-dwnlk-pkts%,%dns-flows%,%dns-flows-cur%,%dns-inv-pkts%,%dns-over-tcp-dwnlk-bytes%,%dns-over-tcp-dwnlk-pkts%,%dns-over-tcp-uplk-bytes%,%dns-over-tcp-uplk-pkts%,%dns-req-a-query%,%dns-req-cname-query%,%dns-req-ns-query%,%dns-req-ptr-query%,%dns-req-unknown-query%,%dns-rsp-a-query%,%dns-rsp-cname-query%,%dns-rsp-ns-query%,%dns-rsp-ptr-query%,%dns-rsp-unknown-query%,%dns-unk-opcode%,%dns-uplk-bytes%,%dns-uplk-pkts%,%icmp-inv-pkts%,%p2p-applejuice-dwlnk-bytes%,%p2p-applejuice-dwlnk-pkts%,%p2p-applejuice-uplnk-bytes%,%p2p-applejuice-uplnk-pkts%,%p2p-ares-dwlnk-bytes%,%p2p-ares-dwlnk-pkts%,%p2p-ares-uplnk-bytes%,%p2p-ares-uplnk-pkts%,%p2p-directconnect-dwlnk-bytes%,%p2p-directconnect-dwlnk-pkts%,%p2p-directconnect-uplnk-bytes%,%p2p-directconnect-uplnk-pkts%,%p2p-feidian-dwlnk-bytes%,%p2p-feidian-dwlnk-pkts%,%p2p-feidian-uplnk-bytes%,%p2p-feidian-uplnk-pkts%

Key	Description	Default Value in Config File
ECS4Sch	EC S4 Sch ema	EMS,ECS4,%date%,%time%,%p2p-filetopia-dwlnk-bytes%,%p2p-filetopia-dwlnk-pkts%,%p2p-filetopia-uplnk-bytes%,%p2p-filetopia-uplnk-pkts%,%p2p-gadugadu-dwlnk-bytes%,%p2p-gadugadu-dwlnk-pkts%,%p2p-gadugadu-uplnk-bytes%,%p2p-gadugadu-uplnk-pkts%,%p2p-imesh-dwlnk-bytes%,%p2p-imesh-dwlnk-pkts%,%p2p-imesh-uplnk-bytes%,%p2p-imesh-uplnk-pkts%,%p2p-manolito-dwlnk-bytes%,%p2p-manolito-dwlnk-pkts%,%p2p-manolito-uplnk-bytes%,%p2p-manolito-uplnk-pkts%,%p2p-msn-non-voice-dwlnk-bytes%,%p2p-msn-non-voice-dwlnk-pkts%,%p2p-msn-non-voice-uplnk-bytes%,%p2p-msn-non-voice-uplnk-pkts%,%p2p-msn-voice-dwlnk-bytes%,%p2p-msn-voice-dwlnk-pkts%,%p2p-msn-voice-uplnk-bytes%,%p2p-msn-voice-uplnk-pkts%,%p2p-mute-dwlnk-bytes%,%p2p-mute-dwlnk-pkts%,%p2p-mute-uplnk-bytes%,%p2p-mute-uplnk-pkts%,%p2p-pando-dwlnk-bytes%,%p2p-pando-dwlnk-pkts%,%p2p-pando-uplnk-bytes%,%p2p-pando-uplnk-pkts%,%p2p-pplive-dwlnk-bytes%,%p2p-pplive-dwlnk-pkts%,%p2p-pplive-uplnk-bytes%,%p2p-pplive-uplnk-pkts%,%p2p-ppstream-dwlnk-bytes%,%p2p-ppstream-dwlnk-pkts%,%p2p-ppstream-uplnk-bytes%,%p2p-ppstream-uplnk-pkts%,%p2p-qq-dwlnk-bytes%,%p2p-qq-dwlnk-pkts%,%p2p-qqlive-dwlnk-bytes%,%p2p-qqlive-dwlnk-pkts%,%p2p-qqlive-uplnk-bytes%,%p2p-qqlive-uplnk-pkts%,%p2p-qq-uplnk-bytes%,%p2p-qq-uplnk-pkts%,%p2p-skinny-dwlnk-bytes%,%p2p-skinny-dwlnk-pkts%,%p2p-skinny-uplnk-bytes%,%p2p-skinny-uplnk-pkts%,%p2p-skype-non-voice-dwlnk-bytes%,%p2p-skype-non-voice-dwlnk-pkts%,%p2p-skype-non-voice-uplnk-bytes%,%p2p-skype-non-voice-uplnk-pkts%,%p2p-skype-voice-dwlnk-bytes%,%p2p-skype-voice-dwlnk-pkts%,%p2p-skype-voice-uplnk-bytes%,%p2p-skype-voice-uplnk-pkts%,%p2p-sopcast-dwlnk-bytes%,%p2p-sopcast-dwlnk-pkts%,%p2p-sopcast-uplnk-bytes%,%p2p-sopcast-uplnk-pkts%,%p2p-soulseek-dwlnk-bytes%,%p2p-soulseek-dwlnk-pkts%,%p2p-soulseek-uplnk-bytes%
ECS5Sch	EC S5 Sch ema	EMS,ECS5,%date%,%time%,%p2p-soulseek-uplnk-pkts%,%p2p-yahoo-non-voice-dwlnk-bytes%,%p2p-yahoo-non-voice-dwlnk-pkts%,%p2p-yahoo-non-voice-uplnk-bytes%,%p2p-yahoo-non-voice-uplnk-pkts%,%p2p-yahoo-voice-dwlnk-bytes%,%p2p-yahoo-voice-dwlnk-pkts%,%p2p-yahoo-voice-uplnk-bytes%,%p2p-yahoo-voice-uplnk-pkts%,%p2p-zattoo-dwlnk-bytes%,%p2p-zattoo-dwlnk-pkts%,%p2p-zattoo-uplnk-bytes%,%p2p-zattoo-uplnk-pkts%
IPSG Sch	IPS G Sch ema	EMS,IPSG,%date%,%time%,%vpname%,%vpnid%,%servname%,%servid%,%rad-servaddr%,%rad-servport%,%total-start-req-rcv%,%total-interim-update-req-rcv%,%total-stop-req-rcv%,%total-unknown-req-rcv%,%total-rsp-sent%,%total-start-req-retrans-rcv%,%total-start-rsp-sent%,%total-discard-msgs-unknown-clnt%,%total-discard-msgs-ignore-interim%,%total-discard-msgs-ignore-stop%,%total-discard-msgs-incorrect-secret%,%total-discard-msgs-attr-missing%

Key	Description	Default Value in Config File
ASN GW1 Sch	AS NG W1 Sch ema	EMS,ASNGW1,%date%,%time%,%vpname%,%vpnid%,%servname%,%servid%,%peeripaddr%,%r6mspreattreq-totsent%,%r6mspreattreq-retransent%,%r6mspreattreq-totrec%,%r6mspreattreq-totacc%,%r6mspreattreq-totdenied%,%r6mspreattreq-totdiscard%,%r6mspreattreq-badform%,%r6mspreattreq-decodeerr%,%r6mspreattreq-unspecerr%,%r6mspreattreq-missmandtlv%,%r6mspreattreq-tlvvalinval%,%r6mspreattreq-unknownnlv%,%r6mspreattreq-duptlvfound%,%r6mspreattreq-noessfound%,%r6mspreattreq-transiderr%,%r6mspreattreq-totsent%,%r6mspreattreq-retransent%,%r6mspreattreq-totrec%,%r6mspreattreq-totacc%,%r6mspreattreq-totdenied%,%r6mspreattreq-totdiscard%,%r6mspreattreq-badform%,%r6mspreattreq-decodeerr%,%r6mspreattreq-unspecerr%,%r6mspreattreq-missmandtlv%,%r6mspreattreq-tlvvalinval%,%r6mspreattreq-unknownnlv%,%r6mspreattreq-duptlvfound%,%r6mspreattreq-noessfound%,%r6mspreattreq-transiderr%,%r6mspreattreq-totsent%,%r6mspreattreq-retransent%,%r6mspreattreq-totrec%,%r6mspreattreq-totacc%,%r6mspreattreq-totdenied%,%r6mspreattreq-totdiscard%,%r6mspreattreq-badform%,%r6mspreattreq-decodeerr%,%r6mspreattreq-unspecerr%,%r6mspreattreq-missmandtlv%,%r6mspreattreq-tlvvalinval%,%r6mspreattreq-unknownnlv%,%r6mspreattreq-duptlvfound%,%r6mspreattreq-noessfound%,%r6mspreattreq-transiderr%,%r6mspreattreq-totsent%,%r6mspreattreq-retransent%,%r6mspreattreq-totrec%,%r6mspreattreq-totacc%,%r6mspreattreq-totdenied%,%r6mspreattreq-totdiscard%,%r6mspreattreq-badform%,%r6mspreattreq-decodeerr%,%r6mspreattreq-unspecerr%,%r6mspreattreq-missmandtlv%,%r6mspreattreq-tlvvalinval%,%r6mspreattreq-unknownnlv%,%r6mspreattreq-duptlvfound%,%r6mspreattreq-noessfound%,%r6mspreattreq-transiderr%,%r6mspreattreq-totsent%,%r6mspreattreq-retransent%,%r6mspreattreq-totrec%,%r6mspreattreq-totacc%,%r6mspreattreq-totdenied%,%r6mspreattreq-totdiscard%
ASN GW2 Sch	AS NG W2 Sch ema	EMS,ASNGW2,%date%,%time%,%vpname%,%vpnid%,%servname%,%servid%,%peeripaddr%,%r6contextrepo-badform%,%r6contextrepo-decodeerr%,%r6contextrepo-unspecerr%,%r6contextrepo-missmandtlv%,%r6contextrepo-tlvvalinval%,%r6contextrepo-unknownnlv%,%r6contextrepo-duptlvfound%,%r6contextrepo-noessfound%,%r6contextrepo-transiderr%,%r6contextrepo-totsent%,%r6contextrepo-retransent%,%r6contextrepo-totrec%,%r6contextrepo-totacc%,%r6contextrepo-totdenied%,%r6contextrepo-totdiscard%,%r6contextrepo-badform%,%r6contextrepo-decodeerr%,%r6contextrepo-unspecerr%,%r6contextrepo-missmandtlv%,%r6contextrepo-tlvvalinval%,%r6contextrepo-unknownnlv%,%r6contextrepo-duptlvfound%,%r6contextrepo-noessfound%,%r6contextrepo-transiderr%,%r6autheaptra-totsent%,%r6autheaptra-retransent%,%r6autheaptra-totrec%,%r6autheaptra-totacc%,%r6autheaptra-totdenied%,%r6autheaptra-totdiscard%,%r6autheaptra-badform%,%r6autheaptra-decodeerr%,%r6autheaptra-unspecerr%,%r6autheaptra-missmandtlv%,%r6autheaptra-tlvvalinval%,%r6autheaptra-unknownnlv%,%r6autheaptra-duptlvfound%,%r6autheaptra-noessfound%,%r6autheaptra-transiderr%,%r6autheaptra-outofordrcd%,%r6autheapsta-totrec%,%r6autheapsta-totacc%,%r6autheapsta-totdenied%,%r6autheapsta-totdiscard%,%r6autheapsta-badform%,%r6autheapsta-decodeerr%,%r6autheapsta-unspecerr%,%r6autheapsta-missmandtlv%,%r6autheapsta-tlvvalinval%,%r6autheapsta-unknownnlv%,%r6autheapsta-duptlvfound%,%r6autheapsta-noessfound%,%r6autheapsta-transiderr%,%r6autheapsta-outofordrcd%,%r6autheapsta-noresourcedrop%,%r6autheapsta-bsinireauth%,%r6msattreq-totsent%,%r6msattreq-retransent%,%r6msattreq-totrec%,%r6msattreq-totacc%,%r6msattreq-totdenied%,%r6msattreq-totdiscard%,%r6msattreq-badform%,%r6msattreq-decodeerr%,%r6msattreq-unspecerr%,%r6msattreq-missmandtlv%,%r6msattreq-tlvvalinval%,%r6msattreq-unknownnlv%

■ The bs.cfg File

Key	Description	Default Value in Config File
ASN GW3 Sch ema	AS NG W3 Sch ema	EMS,ASNGW3,%date%,%time%,%vpnname%,%vpnid%,%servname%,%servid%,%peeripaddr%,%r6msattreq- duptlvfound%,%r6msattreq-nosessfound%,%r6msattreq-transiderr%,%r6msattrsp-totsent%,%r6msattrsp- retranssent%,%r6msattrsp-totrec%,%r6msattrsp-totacc%,%r6msattrsp-totdenied%,%r6msattrsp- totdiscard%,%r6msattrsp-badform%,%r6msattrsp-decodeerr%,%r6msattrsp-unspecerr%,%r6msattrsp- missmandtlv%,%r6msattrsp-tlvvalinval%,%r6msattrsp-unknownctlv%,%r6msattrsp-duptlvfound%,%r6msattrsp- nosessfound%,%r6msattrsp-transiderr%,%r6msattack-totsent%,%r6msattack-retranssent%,%r6msattack- totrec%,%r6msattack-totacc%,%r6msattack-totdenied%,%r6msattack-totdiscard%,%r6msattack- badform%,%r6msattack-decodeerr%,%r6msattack-unspecerr%,%r6msattack-missmandtlv%,%r6msattack- tlvvalinval%,%r6msattack-unknownctlv%,%r6msattack-duptlvfound%,%r6msattack-nosessfound%,%r6msattack- transiderr%,%r6datapathregreq-totsent%,%r6datapathregreq-retranssent%,%r6datapathregreq- totrec%,%r6datapathregreq-totacc%,%r6datapathregreq-totdenied%,%r6datapathregreq- totdiscard%,%r6datapathregreq-badform%,%r6datapathregreq-decodeerr%,%r6datapathregreq- unspecerr%,%r6datapathregreq-missmandtlv%,%r6datapathregreq-tlvvalinval%,%r6datapathregreq- unknownctlv%,%r6datapathregreq-duptlvfound%,%r6datapathregreq-nosessfound%,%r6datapathregreq- transiderr%,%r6datapathregrsp-totsent%,%r6datapathregrsp-retranssent%,%r6datapathregrsp- totrec%,%r6datapathregrsp-totacc%,%r6datapathregrsp-totdenied%,%r6datapathregrsp- totdiscard%,%r6datapathregrsp-badform%,%r6datapathregrsp-decodeerr%,%r6datapathregrsp- unspecerr%,%r6datapathregrsp-missmandtlv%,%r6datapathregrsp-tlvvalinval%,%r6datapathregrsp- unknownctlv%,%r6datapathregrsp-duptlvfound%,%r6datapathregrsp-nosessfound%,%r6datapathregrsp- transiderr%,%r6datapathregack-totsent%
ASN GW4 Sch ema	AS NG W4 Sch ema	EMS,ASNGW4,%date%,%time%,%vpnname%,%vpnid%,%servname%,%servid%,%peeripaddr%,%r6datapathre- gack-retranssent%,%r6datapathregack-totrec%,%r6datapathregack-totacc%,%r6datapathregack- totdenied%,%r6datapathregack-totdiscard%,%r6datapathregack-badform%,%r6datapathregack- decodeerr%,%r6datapathregack-unspecerr%,%r6datapathregack-missmandtlv%,%r6datapathregack- tlvvalinval%,%r6datapathregack-unknownctlv%,%r6datapathregack-duptlvfound%,%r6datapathregack- nosessfound%,%r6datapathregack-transiderr%,%r6datapathderegreq-totsent%,%r6datapathderegreq- retranssent%,%r6datapathderegreq-totrec%,%r6datapathderegreq-totacc%,%r6datapathderegreq- totdenied%,%r6datapathderegreq-totdiscard%,%r6datapathderegreq-badform%,%r6datapathderegreq- decodeerr%,%r6datapathderegreq-unspecerr%,%r6datapathderegreq-missmandtlv%,%r6datapathderegreq- tlvvalinval%,%r6datapathderegreq-unknownctlv%,%r6datapathderegreq-duptlvfound%,%r6datapathderegreq- nosessfound%,%r6datapathderegreq-transiderr%,%r6datapathderegreq-totsent%,%r6datapathderegreq- retranssent%,%r6datapathderegreq-totrec%,%r6datapathderegreq-totacc%,%r6datapathderegreq- totdenied%,%r6datapathderegreq-totdiscard%,%r6datapathderegreq-badform%,%r6datapathderegreq- decodeerr%,%r6datapathderegreq-unspecerr%,%r6datapathderegreq-missmandtlv%,%r6datapathderegreq- tlvvalinval%,%r6datapathderegreq-unknownctlv%,%r6datapathderegreq-duptlvfound%,%r6datapathderegreq- nosessfound%,%r6datapathderegreq-transiderr%,%r6keychadir-totsent%,%r6keychadir- retranssent%,%r6keychadir-totrec%,%r6keychadir-totacc%,%r6keychadir-totdenied%,%r6keychadir- totdiscard%,%r6keychadir-badform%,%r6keychadir-decodeerr%,%r6keychadir-unspecerr%,%r6keychadir- missmandtlv%,%r6keychadir-tlvvalinval%,%r6keychadir-unknownctlv%,%r6keychadir- duptlvfound%,%r6keychadir-nosessfound%,%r6keychadir-transiderr%

Key	Description	Default Value in Config File
ASNGW5Sch	ASNGW5 Schema	EMS,ASNGW5,%date%,%time%,%vpname%,%vpnid%,%servname%,%servid%,%peeripaddr%,%r6keychaack-totsent%,%r6keychaack-retransent%,%r6keychaack-totrec%,%r6keychaack-totacc%,%r6keychaack-totdenied%,%r6keychaack-totdiscard%,%r6keychaack-badform%,%r6keychaack-decodeerr%,%r6keychaack-unspecerr%,%r6keychaack-missmandtlv%,%r6keychaack-tlvvalinval%,%r6keychaack-unknowntlv%,%r6keychaack-duptlvfound%,%r6keychaack-nosessfound%,%r6keychaack-transiderr%,%r6unknown-totrec%,%r6unknown-totacc%,%r6unknown-totdenied%,%r6unknown-totdiscard%,%r6unknown-badform%,%r6unknown-decodeerr%,%r6unknown-unspecerr%,%r6unknown-missmandtlv%,%r6unknown-tlvvalinval%,%r6unknown-unknowntlv%,%r6unknown-duptlvfound%,%r6unknown-nosessfound%,%r6unknown-transiderr%,%r6datagrerec-totpackrec%,%r6datagrerec-protyperrorr%,%r6datagrerec-totbytre%,%r6datagrerec-grekeyabs%,%r6datagrerec-grechker%,%r6datagrerec-invpacklen%,%r6datagrerec-nosessfou%,%r6datagrerec-unspecerr%,%r6datagresend-totpacksent%,%r6datagresend-sendererr%,%r6datagresend-totbytsent%,%r6datagresend-unspeerr%
SGSN1sch	SGSN1 Schema	EMS,SGSN1,%date%,%time%,%vpname%,%vpnid%,%servname%,%3G-attached%,%2G-attached%,%3G-home-subscribers%,%2G-home-subscribers%,%3G-visiting-national%,%2G-visiting-national%,%3G-visiting-foreign%,%2G-visiting-foreign%,%pmm-connected%,%pmm-idle%,%3G-IMSI-Attch%,%2G-IMSI-Attch%,%3G-ptmsi-Attch%,%2G-ptmsi-Attch%,%3G-attach-accept%,%2G-attach-accept%,%3G-attach-complete%,%2G-attach-complete%,%3G-attach-reject%,%2G-attach-reject%,%3G-intra-rau%,%2G-intra-rau%,%3G-periodic-rau%,%2G-periodic-rau%,%3G-inter-sgsn-rau%,%2G-inter-sgsn-rau%,%3G-rau-complete%,%2G-rau-complete%,%3G-rau-reject%,%2G-rau-reject%,%3G-ms-init-detach%,%2G-ms-init-detach%,%3G-nw-init-detach%,%2G-nw-init-detach%,%3G-ms-init-detach-accept%,%2G-ms-init-detach-accept%,%3G-nw-init-detach-accept%,%2G-nw-init-detach-accept%,%3G-signalling-service-request%,%2G-signalling-service-request%,%3G-data-service-request%,%2G-data-service-request%,%3G-service-response%,%2G-service-response%,%3G-service-reject%,%2G-service-reject%,%3G-paging-request%,%2G-paging-request%,%3G-gmm-status-sent%,%2G-gmm-status-sent%,%3G-gmm-status-rcvd%,%2G-gmm-status-rcvd%,%3G-auth-cipher-request%,%2G-auth-cipher-request%,%3G-auth-cipher-response%,%2G-auth-cipher-response%,%3G-auth-cipher-reject%,%2G-auth-cipher-reject%,%3G-auth-cipher-mac-fail%,%2G-auth-cipher-mac-fail%,%3G-auth-cipher-syn-fail%,%2G-auth-cipher-syn-fail%,%3G-ptmsi-realloc%,%2G-ptmsi-realloc%,%3G-ptmsi-realloc-complete%,%2G-ptmsi-realloc-complete%,%3G-imsi-identity-request%,%2G-imsi-identity-request%,%3G-imeisv-identity-request%,%2G-imeisv-identity-request%,%3G-imsi-identity-response%,%2G-imsi-identity-response%,%3G-imeisv-identity-response%,%2G-imeisv-identity-response%,%3G-unknown-identity-response%,%2G-unknown-identity-response%
SGSN2sch	SGSN2 Schema	EMS,SGSN2,%date%,%time%,%vpname%,%vpnid%,%servname%,%common-id-sent%,%sec-mode-command%,%sec-mode-complete%,%sec-mode-reject%,%lu-release-request%,%lu-release-command%,%lu-release-complete%,%Reset-received%,%Retransmitted-reset-received%,%Reset-Ack-sent%,%Reset-sent%,%Retransmitted-reset-sent%,%Reset-Ack-received%,%Resource-reset-received%,%Resource-reset-ack-sent%,%Resource-reset-sent%,%Resource-reset-ack-received%,%Error-indication-rcvd%,%Relocation-required%,%Relocation-command%,%Relocation-request%,%Relocation-request-ack%,%Relocation-failure%,%Relocation-prep-failure%,%Relocation-cancel%,%Relocation-cancel-ack%,%Relocation-detect%,%Relocation-complete%,%Forward-srns-context%,%GMM-received-nas-pdu%,%GMM-sent-nas-pdu%,%SM-received-nas-pdu%,%SM-sent-nas-pdu%,%Unidentified-nas-pdu%,%3G-total-actv-req%,%3G-total-actv-accept%,%3G-ms-modify-req%,%3G-ms-modify-accept%,%3G-nw-modify-req%,%3G-nw-modify-accept%,%3G-ms-deactv-req%,%3G-ms-deactv-accept%,%3G-sgsn-init-deact-req%,%3G-sgsn-init-deact-acc%,%RNC-rab-modify-req%,%RNC-rab-rel-req%,%rab-assign-req%,%rab-assign-rsp%,%rab-set/mod-req%,%rab-set/mod-acc%,%rab-rel-req%,%rab-rel-accept%,%map-open-req-tx%,%map-open-req-rx%,%map-open-rsp-tx%,%map-open-rsp-rx%,%map-close-tx%,%map-close-rx%,%map-abort-tx%,%map-abort-rx%,%map-gprs-update-loc-req-tx%,%map-gprs-update-loc-rsp-tx%,%map-gprs-update-loc-err-tx%,%map-gprs-update-loc-timeouts-rx%,%map-cancel-loc-req-rx%,%map-cancel-loc-rsp-tx%,%map-cancel-loc-err-tx%,%map-del-sub-req-rx%,%map-del-sub-rsp-tx%,%map-del-sub-ret-tx%,%map-auth-timeouts-rcvd%,%map-purge-timeouts-rcvd%,%map-insert-sub-rcvd%,%map-standalone-isd-rcvd%,%map-isd-rsp-tx%,%map-isd-err-tx%,%map-auth-fail-rept-req-tx%,%map-auth-fail-rept-rsp-rx%,%map-auth-fail-rept-err-rx%

■ The bs.cfg File

Key	Description	Default Value in Config File
SGSN3Sch	SGSN3 Schema	EMS,SGSN3,%date%,%time%,%vpnname%,%vpnid%,%servname%,%map-auth-fail-rept-timeouts-rcvd%,%map-hlr-reset-rcvd%,%tcap-total-active-trans%,%tcap-total-active-invoks%,%tcap-total-msg-drops%,%tcap-total-msg-rcvd%,%tcap-total-msg-sent%,%tcap-total-abort-rcvd%,%tcap-total-abort-sent%,%tcap-total-comp-rx%,%tcap-total-comp-tx%,%tcap-comp-reterr-rx%,%tcap-comp-reterr-tx%,%tcap-comp-retrej-rx%,%tcap-comp-retrej-tx%,%tcap-tran-incorrect-rx%,%tcap-tran-incorrect-tx%,%tcap-tran-badformed-rx%,%tcap-tran-badformed-tx%,%tcap-tran-unrecognised-rx%,%tcap-tran-unrecognised-tx%,%tcap-comp-incorrect-rx%,%tcap-comp-incorrect-tx%,%tcap-comp-badformed-rx%,%tcap-comp-badformed-tx%,%tcap-comp-unrec-invid-res-rx%,%tcap-comp-unrec-invid-res-tx%,%tcap-comp-unexp-res-rx%,%tcap-comp-unexp-res-tx%,%tcap-user-unrec-opcode-rx%,%tcap-user-unrec-opcode-tx%,%tcap-user-incorr-params-rx%,%tcap-user-incorr-params-tx%,%tcap-user-resourcelimit-rx%,%tcap-user-resourcelimit-tx%,%rab-set/mod-tmr-expired%,%rab-rel-tmr-expired%,%3G-rau-accept-intra%,%3G-rau-accept-inter%,%2G-rau-accept-intra%,%2G-rau-accept-inter%,%3G-attached-with-pdp%,%3G-attached-no-pdp%,%3G-gmm-info-sent%,%2G-gmm-info-sent%,%3G-auth-cipher-rsp-sres-mismatch%,%2G-auth-cipher-rsp-sres-mismatch%,%3G-auth-unacceptable%,%2G-auth-unacceptable%,%3G-imei-identity-request%,%2G-imei-identity-request%,%3G-imei-identity-response%,%2G-imei-identity-response%,%Initial-UE-Rcvd%,%Direct-Trans-Rcvd%,%Error-indication-sent%,%3G-total-num-actv-pdp%,%3G-primary-actv-req%,%3G-primary-actv-accept%,%3G-primary-actv-reject%,%3G-secondary-actv-req%,%3G-secondary-actv-acc%,%3G-secondary-actv-rej%,%3G-dupl-ti-pdpactive%,%3G-dupl-nsapi-pdpactv%,%3G-dupl-pdpaddr-apn-pdpactv%,%3G-dupl-ti-n-pdpactive%,%3G-dupl-pdpaddr-apn-n-pdpactv%,%3G-ms-modify-rej%,%3G-nw-modify-rej%,%3G-ms-deactv-reject%
SGSN4Sch	SGSN4 Schema	EMS,SGSN4,%date%,%time%,%vpnname%,%vpnid%,%servname%,%3G-sgsn-init-deact-rej%,%3G-total-sm-status-req-rx%,%3G-total-sm-status-req-tx%,%RNC-rab-modify-num%,%RNC-rab-rel-num%,%rab-set/mod-fail%,%rab-rel-fail%,%rab-queued%,%total-rab-rej%,%SRNS-ctxt-req-sent%,%SRNS-ctxt-rsp-rcvd%,%SRNS-ctxt-req-tmr-expired%,%SRNS-ctxt-total-pdp-acc%,%SRNS-ctxt-total-pdp-rej%,%SRNS-data-fwd-cmd-sent%,%map-auth-req-tx%,%map-auth-succes%,%map-auth-fail%,%map-imei-req-tx%,%map-imei-succes%,%map-imei-fail%,%map-imei-timeout%,%map-purge-req-tx%,%map-purge-success%,%map-purge-fail%,%tcap-uni-dir-msg-rcvd%,%tcap-uni-dir-msg-sent%,%tcap-begin-msg-rcvd%,%tcap-begin-msg-sent%,%tcap-continue-msg-rcvd%,%tcap-continue-msg-sent%,%tcap-end-msg-rcvd%,%tcap-end-msg-sent%,%tcap-total-comp-invoke-rx%,%tcap-total-comp-invoke-tx%,%tcap-comp-retresult-rx%,%tcap-comp-retresult-tx%,%tcap-tran-unrec-msgtype-rx%,%tcap-tran-unrec-msgtype-tx%,%tcap-tran-resource-limit-rx%,%tcap-tran-resource-limit-tx%,%tcap-comp-unrecognised-rx%,%tcap-comp-unrecognised-tx%,%tcap-comp-unrec-linkid-rx%,%tcap-comp-unrec-linkid-tx%,%tcap-comp-unrec-invid-err-rx%,%tcap-comp-unrec-invid-err-tx%,%tcap-comp-unexp-err-rx%,%tcap-comp-unexp-err-tx%,%tcap-user-duplicate-invid-rx%,%tcap-user-duplicate-invid-tx%,%tcap-user-unexp-linked-resp-rx%,%tcap-user-unexp-linked-resp-tx%,%tcap-user-unexp-linked-oper-rx%,%tcap-user-unexp-linked-oper-tx%,%tcap-user-res-incorr-params-rx%,%tcap-user-res-incorr-params-tx%,%tcap-user-res-unrec-errcode-rx%,%tcap-user-res-unrec-errcode-tx%,%tcap-user-res-unexp-errcode-rx%,%tcap-user-res-unexp-errcode-tx%,%tcap-user-err-incorr-params-rx%,%tcap-user-err-incorr-params-tx%,%tcap-user-initiate-release-rx%,%tcap-user-initiate-release-tx%,%3G-dupl-nsapi-n-pdpactv%,%Direct-Trans-Sent%,%3G-T3350-expiry%

Key	Description	Default Value in Config File
SGSN5Sch	SGSN5 Schema	EMS,SGSN5,%date%,%time%,%vpname%,%vpnid%,%servname%,%2G-T3350-expiry%,%3G-T3360-expiry%,%2G-T3360-expiry%,%3G-T3370-expiry%,%2G-T3370-expiry%,%3G-T3322-expiry%,%2G-T3322-expiry%,%3G-T3313-expiry%,%2G-T3313-expiry%,%mcc%,%mnc%,%lac%,%rac%,%2G-local-ptmsi-Attch%,%2G-paging-success%,%2G-remote-ptmsi-Attch%,%3G-actv-rej-apn-restriction-incompatible%,%3G-actv-rej-by-ggsn%,%3G-actv-rej-conditional-ie-err%,%3G-actv-rej-ie-non-existent%,%3G-actv-rej-insufficient-resources%,%3G-actv-rej-invalid-mandatory-info%,%3G-actv-rej-missing-or-unknown-apn%,%3G-actv-rej-msg-not-compatible-with-prot-state%,%3G-actv-rej-msg-type-non-existent%,%3G-actv-rej-network-failure%,%3G-actv-rej-odb%,%3G-actv-rej-pdp-notft-actv%,%3G-actv-rej-prot-err-unspecified%,%3G-actv-rej-recovery-on-timer-expiry%,%3G-actv-rej-semantically-incorrect%,%3G-actv-rej-semantic-err-in-pkt-filter%,%3G-actv-rej-semantic-error-tft-operation%,%3G-actv-rej-service-not-subscribed%,%3G-actv-rej-service-not-supported%,%3G-actv-rej-svc-opt-tmp-out-of-order%,%3G-actv-rej-syntax-err-in-pkt-filter%,%3G-actv-rej-syntax-err-in-tft-operation%,%3G-actv-rej-unknown-pdp-addr-type%,%3G-actv-rej-unknown-pdp-context%,%3G-actv-rej-unspecified-error%,%3G-actv-rej-usr-auth-failed%,%3G-attach-rej-congestion%,%3G-attach-rej-illegal-me%,%3G-attach-rej-illegal-ms%,%3G-attach-rej-implicitly-detach%,%3G-attach-rej-imsi-unknown-at-hlr%,%3G-attach-rej-network-failure%,%3G-attach-rej-plmn-not-allowed%,%3G-attach-rej-unknown-cause%,%3G-detached%,%3G-ggsn-init-deact-acc%,%3G-ggsn-init-deact-rej%,%3G-ggsn-init-deact-req%,%3G-gprs-and-non-gprs-service-not-allowed%,%3G-gprs-service-not-allowed%,%3G-gprs-service-not-allowed-in-this-plmn%,%3G-hlr-init-deact-acc%,%3G-hlr-init-deact-rej%,%3G-hlr-init-deact-req%,%3G-local-ptmsi-Attch%
SGSN6Sch	SGSN6 Schema	EMS,SGSN6,%date%,%time%,%vpname%,%vpnid%,%servname%,%3G-no-suitable-cells-in-location-area%,%3G-paging-success%,%3G-total-attach-req%,%exist-conn-proc-rej-overload%,%new-connection-rejected-overload%,%3G-total-actv-pdp-with-dir-tunnel%,%3G-remote-ptmsi-Attch%,%3G-roaming-not-allowed-in-this-location-area%,%3G-inter-rau-reject%,%3G-total-inter-rau-failure%,%3G-rau-accept-periodic%,%3G-periodic-rau-reject%,%3G-total-periodic-rau-failure%,%3G-intra-rau-reject%,%3G-total-intra-rau-failure%,%3G-total-attach-fail%,%3G-total-actv-reject%,%3G-total-actv-fail%,%3G-intra-rau-rej-imsi-unknown-hlr%,%2G-intra-rau-rej-imsi-unknown-hlr%,%3G-intra-rau-rej-illegal-ms%,%2G-intra-rau-rej-illegal-ms%,%3G-intra-rau-rej-illegal-me%,%2G-intra-rau-rej-illegal-me%,%3G-intra-rau-rej-gprs-svc-not-allw%,%2G-intra-rau-rej-gprs-svc-not-allw%,%3G-intra-rau-rej-nongprs-svc-not-allow%,%2G-intra-rau-rej-nongprs-svc-not-allow%,%3G-intra-rau-rej-msid-not-derived-by-nw%,%2G-intra-rau-rej-msid-not-derived-by-nw%,%3G-intra-rau-rej-implicitly-detach%,%2G-intra-rau-rej-implicitly-detach%,%3G-intra-rau-rej-plmn-not-allowed%,%2G-intra-rau-rej-plmn-not-allowed%,%3G-intra-rau-rej-loc-area-not-allow%,%2G-intra-rau-rej-loc-area-not-allow%,%3G-intra-rau-rej-roam-not-allow-larea%,%2G-intra-rau-rej-roam-not-allow-larea%,%3G-intra-rau-rej-gprs-svc-not-allow-plmn%,%2G-intra-rau-rej-gprs-svc-not-allow-plmn%,%3G-intra-rau-rej-no-cells-in-loc-area%,%2G-intra-rau-rej-no-cells-in-loc-area%,%3G-intra-rau-rej-msc-not-reachable%,%2G-intra-rau-rej-msc-not-reachable%,%3G-intra-rau-rej-network-failure%,%2G-intra-rau-rej-network-failure%,%3G-intra-rau-rej-mac-failure%,%2G-intra-rau-rej-mac-failure%,%3G-intra-rau-rej-syn-failure%,%2G-intra-rau-rej-syn-failure%,%3G-intra-rau-rej-congestion%,%2G-intra-rau-rej-congestion%

■ The bs.cfg File

Key	Description	Default Value in Config File
SGSN7Schema	SGSN7 Schema	EMS,SGSN7,%date%,%time%,%vpnname%,%vpnid%,%servname%,%3G-intra-rau-rej-gsm-auth-unacceptable%,%2G-intra-rau-rej-gsm-auth-unacceptable%,%3G-intra-rau-rej-no-pdp-ctx-actv%,%2G-intra-rau-rej-no-pdp-ctx-actv%,%3G-intra-rau-rej-retry-from-new-cell%,%2G-intra-rau-rej-retry-from-new-cell%,%3G-intra-rau-rej-ival-mand-info%,%2G-intra-rau-rej-ival-mand-info%,%3G-intra-rau-rej-msg-type-non-exist%,%2G-intra-rau-rej-msg-type-non-exist%,%3G-intra-rau-rej-mtype-incompat-pstate%,%2G-intra-rau-rej-mtype-incompat-pstate%,%3G-intra-rau-rej-ie-non-existent%,%2G-intra-rau-rej-ie-non-existent%,%3G-intra-rau-rej-cond-ie-error%,%2G-intra-rau-rej-cond-ie-error%,%3G-intra-rau-rej-msg-incompat-prot-state%,%2G-intra-rau-rej-msg-incompat-prot-state%,%3G-intra-rau-rej-prot-error%,%2G-intra-rau-rej-prot-error%,%3G-intra-rau-rej-unknown-error%,%2G-intra-rau-rej-unknown-error%,%3G-intra-prau-rej-imsi-unknown-hlr%,%2G-intra-prau-rej-imsi-unknown-hlr%,%3G-intra-prau-rej-illegal-ms%,%2G-intra-prau-rej-illegal-ms%,%3G-intra-prau-rej-illegal-me%,%2G-intra-prau-rej-illegal-me%,%3G-intra-prau-rej-gprs-svc-not-allow%,%2G-intra-prau-rej-gprs-svc-not-allow%,%3G-intra-prau-rej-nongprs-svc-not-allow%,%2G-intra-prau-rej-nongprs-svc-not-allow%,%3G-intra-prau-rej-msid-not-derived-by-nw%,%2G-intra-prau-rej-msid-not-derived-by-nw%,%3G-intra-prau-rej-implicitly-detach%,%2G-intra-prau-rej-implicitly-detach%,%3G-intra-prau-rej-plmn-not-allowed%,%2G-intra-prau-rej-plmn-not-allowed%,%3G-intra-prau-rej-loc-area-not-allowed%,%2G-intra-prau-rej-loc-area-not-allowed%,%3G-intra-prau-rej-roam-not-allowed-larea%,%2G-intra-prau-rej-roam-not-allowed-larea%,%3G-intra-prau-rej-gprs-svc-not-allowed-plmn%,%2G-intra-prau-rej-gprs-svc-not-allowed-plmn%,%3G-intra-prau-rej-congestion%,%2G-intra-prau-rej-congestion%
SGSN8Schema	SGSN8 Schema	EMS,SGSN8,%date%,%time%,%vpnname%,%vpnid%,%servname%,%3G-intra-prau-rej-gsm-auth-unacceptable%,%2G-intra-prau-rej-gsm-auth-unacceptable%,%3G-intra-prau-rej-no-pdp-ctx-actv%,%2G-intra-prau-rej-no-pdp-ctx-actv%,%3G-intra-prau-rej-retry-from-new-cell%,%2G-intra-prau-rej-retry-from-new-cell%,%3G-intra-prau-rej-sem-wrong-msg%,%2G-intra-prau-rej-sem-wrong-msg%,%3G-intra-prau-rej-ival-mand-info%,%2G-intra-prau-rej-ival-mand-info%,%3G-intra-prau-rej-msg-type-non-exist%,%2G-intra-prau-rej-msg-type-non-exist%,%3G-intra-prau-rej-mtype-incompat-pstate%,%2G-intra-prau-rej-mtype-incompat-pstate%,%3G-intra-prau-rej-ie-non-existent%,%2G-intra-prau-rej-ie-non-existent%,%3G-intra-prau-rej-cond-ie-error%,%2G-intra-prau-rej-cond-ie-error%,%3G-intra-prau-rej-msg-incompat-pstate%,%2G-intra-prau-rej-msg-incompat-pstate%,%3G-intra-prau-rej-prot-error%,%2G-intra-prau-rej-prot-error%,%3G-intra-prau-rej-unknown-error%,%2G-intra-prau-rej-unknown-error%,%3G-inter-rau-rej-imsi-unknown-hlr%,%2G-inter-rau-rej-imsi-unknown-hlr%,%3G-inter-rau-rej-illegal-ms%,%2G-inter-rau-rej-illegal-ms%,%3G-inter-rau-rej-illegal-me%,%2G-inter-rau-rej-illegal-me%,%3G-inter-rau-rej-gprs-svc-not-allow%,%2G-inter-rau-rej-gprs-svc-not-allow%,%3G-inter-rau-rej-nongprs-svc-not-allow%,%2G-inter-rau-rej-nongprs-svc-not-allow%,%3G-inter-rau-rej-msid-not-derived-by-nw%,%2G-inter-rau-rej-msid-not-derived-by-nw%,%3G-inter-rau-rej-implicitly-detach%,%2G-inter-rau-rej-implicitly-detach%,%3G-inter-rau-rej-plmn-not-allowed%,%2G-inter-rau-rej-plmn-not-allowed%,%3G-inter-rau-rej-loc-area-not-allowed%,%2G-inter-rau-rej-loc-area-not-allowed%,%3G-inter-rau-rej-roam-not-allowed-larea%,%2G-inter-rau-rej-roam-not-allowed-larea%,%3G-inter-rau-rej-gprs-svc-not-allowed-plmn%,%2G-inter-rau-rej-gprs-svc-not-allowed-plmn%

Key	Description	Default Value in Config File
SGSN9Schem	SGSN9 Schema	EMS,SGSN9,%date%,%time%,%vpname%,%vpnid%,%servname%,%3G-inter-rau-rej-no-cells-in-location-area%,%2G-inter-rau-rej-no-cells-in-location-area%,%3G-inter-rau-rej-msc-not-reachable%,%2G-inter-rau-rej-msc-not-reachable%,%3G-inter-rau-rej-network-failure%,%2G-inter-rau-rej-network-failure%,%3G-inter-rau-rej-mac-failure%,%2G-inter-rau-rej-mac-failure%,%3G-inter-rau-rej-syn-failure%,%2G-inter-rau-rej-syn-failure%,%3G-inter-rau-rej-congestion%,%2G-inter-rau-rej-congestion%,%3G-inter-rau-rej-gsm-auth-unacceptable%,%2G-inter-rau-rej-gsm-auth-unacceptable%,%3G-inter-rau-rej-no-pdp-ctx-actv%,%2G-inter-rau-rej-no-pdp-ctx-actv%,%3G-inter-rau-rej-retry-from-new-cell%,%2G-inter-rau-rej-retry-from-new-cell%,%3G-inter-rau-rej-sem-wrong-msg%,%2G-inter-rau-rej-sem-wrong-msg%,%3G-inter-rau-rej-inval-mand-info%,%2G-inter-rau-rej-inval-mand-info%,%3G-inter-rau-rej-msg-type-non-exist%,%2G-inter-rau-rej-msg-type-non-exist%,%3G-inter-rau-rej-mtype-incompat-pstate%,%2G-inter-rau-rej-mtype-incompat-pstate%,%3G-inter-rau-rej-ie-non-existent%,%2G-inter-rau-rej-ie-non-existent%,%3G-inter-rau-rej-cond-ie-error%,%2G-inter-rau-rej-cond-ie-error%,%3G-inter-rau-rej-msg-not-compat-pstate%,%2G-inter-rau-rej-msg-not-compat-pstate%,%3G-inter-rau-rej-prot-error%,%2G-inter-rau-rej-prot-error%,%3G-inter-rau-rej-unknown-error%,%2G-inter-rau-rej-unknown-error%,%3G-intra-ra-upd-rau-fail-iu_release%,%3G-intra-ra-upd-rau-fail-ongoing-proc%,%2G-intra-ra-upd-rau-fail-ongoing-proc%,%3G-intra-perio-rau-fail-iu_release%,%3G-intra-perio-rau-fail-ongoing-proc%,%2G-intra-perio-rau-fail-ongoing-proc%,%3G-inter-rau-fail-iu_release%,%3G-inter-rau-fail-ongoing-proc%,%2G-inter-rau-fail-ongoing-proc%,%3G-attach-fail-iu_release%,%3G-attach-fail-ongoing-proc%,%2G-attach-fail-ongoing-proc%
SGSNASch	SGSNA Schema	EMS,SGSNA,%date%,%time%,%vpname%,%vpnid%,%servname%,%2G-total-attach-fail%,%3G-total-rau-failure%,%2G-total-rau-failure%,%2G-rau-accept-periodic%,%3G-ret-rau-accept-periodic%,%2G-ret-rau-accept-periodic%,%2G-intra-rau-reject%,%2G-periodic-rau-reject%,%2G-inter-rau-reject%,%2G-total-intra-rau-failure%,%2G-total-periodic-rau-failure%,%2G-total-inter-rau-failure%,%2G-total-actv-req%,%2G-total-actv-accept%,%2G-total-num-actv-pdp%,%2G-primary-actv-req%,%2G-primary-actv-accept%,%2G-total-actv-reject%,%2G-primary-actv-reject%,%2G-secondary-actv-req%,%2G-secondary-actv-acc%,%2G-secondary-actv-rej%,%2G-actv-rej-odb%,%2G-actv-rej-insufficient-resources%,%2G-actv-rej-network-failure%,%2G-actv-rej-missing-or-unknown-apn%,%2G-actv-rej-unknown-pdp-addr-type%,%2G-actv-rej-usr-auth-failed%,%2G-actv-rej-by-ggsn%,%2G-actv-rej-undefined-error%,%2G-actv-rej-service-not-supported%,%2G-actv-rej-service-not-subscribed%,%2G-actv-rej-svc-opt-tmp-out-of-order%,%2G-actv-rej-apn-restriction-incompatible%,%2G-actv-rej-semantically-incorrect%,%2G-actv-rej-invalid-mandatory-info%,%2G-actv-rej-msg-type-non-existent%,%2G-actv-rej-ie-non-existent%,%2G-actv-rej-conditional-ie-err%,%2G-actv-rej-msg-not-compatible-with-prot-state%,%2G-actv-rej-recovery-on-timer-expiry%,%2G-actv-rej-prot-err-undefined%,%2G-actv-rej-llc-sndcp-fail%,%2G-actv-rej-qos-not-acc%,%2G-actv-rej-semantic-error-tft-operation%,%2G-actv-rej-syntax-err-in-tft-operation%,%2G-actv-rej-unknown-pdp-context%,%2G-actv-rej-semantic-err-in-pkt-filter%,%2G-actv-rej-syntax-err-in-pkt-filter%,%2G-actv-rej-pdp-notft-actv%,%2G-dupl-ti-pdpactive%,%2G-dupl-nsapi-pdpactv%,%2G-dupl-pdpaddr-apn-pdpactv%,%2G-dupl-ti-n-pdpactive%,%2G-dupl-nsapi-n-pdpactv%,%2G-dupl-pdpaddr-apn-n-pdpactv%

Key	Description	Default Value in Config File
SGS NBS ch	SG SN B Sch ema	EMS,SGSNB,%date%,%time%,%vpname%,%vpnid%,%servname%,%2G-ms-modify-req%,%2G-ms-modify-accept%,%2G-ms-modify-rej%,%2G-nw-modify-req%,%2G-nw-ret-modify-req%,%2G-nw-modify-accept%,%2G-nw-modify-rej%,%2G-modify-rej-insufficient-resources%,%2G-modify-rej-service-opt-not-supported%,%2G-modify-rej-semantic-err-tft-operation%,%2G-modify-rej-syntax-err-tft-operation%,%2G-modify-rej-semantic-err-pkt-filter%,%2G-modify-rej-syntax-err-pkt-filter%,%2G-modify-rej-semantic-incorrect-message%,%2G-modify-rej-invalid-mand-info%,%2G-modify-rej-msg-non-existent%,%2G-modify-rej-ie-non-existent%,%2G-modify-rej-conditional-ie-err%,%2G-modify-rej-msg-not-compatible-prot-state%,%2G-modify-rej-rcvry-on-tmr-expiry%,%2G-modify-rej-prot-err-unspec%,%2G-ms-deactv-req%,%2G-ms-deactv-accept%,%2G-ms-deactv-reject%,%2G-ms-deactv-rej-rx-odb%,%2G-ms-deactv-rej-rx-mbms-cap-insuff-res%,%2G-ms-deactv-rej-rx-llc-sndcp-fail-gb%,%2G-ms-deactv-rej-rx-insuff-res%,%2G-ms-deactv-rej-rx-miss-unkwn-apn%,%2G-ms-deactv-rej-rx-unkwn-pdp-addr%,%2G-ms-deactv-rej-rx-usr-auth-fail%,%2G-ms-deactv-rej-rx-actv-rej-ggsn%,%2G-ms-deactv-rej-rx-actv-rej-unspec%,%2G-ms-deactv-rej-rx-service-opt-no-support%,%2G-ms-deactv-rej-rx-service-opt-no-sub%,%2G-ms-deactv-rej-rx-svc-opt-temp-out-order%,%2G-ms-deactv-rej-rx-nsapi-already-used%,%2G-ms-deactv-rej-rx-reg-deactv%,%2G-ms-deactv-rej-rx-qos-not-acc%,%2G-ms-deactv-rej-rx-nwt-fail%,%2G-ms-deactv-rej-rx-reativation-req%,%2G-ms-deactv-rej-rx-no-feature-support%,%2G-ms-deactv-rej-rx-sem-err-tft-op%,%2G-ms-deactv-rej-rx-syn-err-tft-op%,%2G-ms-deactv-rej-rx-unknown-ctx%,%2G-ms-deactv-rej-rx-ctx-no-tft-already-actv%,%2G-ms-deactv-rej-rx-mcast-grp-mem-tout%,%2G-ms-deactv-rej-rx-sem-err-pkt-filter%,%2G-ms-deactv-rej-rx-syn-err-pkt-filter%,%2G-ms-deactv-rej-rx-invalid-trans-id%
SGS NCS ch	SG SN C Sch ema	EMS,SGSNC,%date%,%time%,%vpname%,%vpnid%,%servname%,%2G-ms-deactv-rej-rx-sem-incorrect-msg%,%2G-ms-deactv-rej-rx-inval-mand-info%,%2G-ms-deactv-rej-rx-msg-non-existent%,%2G-ms-deactv-rej-rx-ie-non-existent%,%2G-ms-deactv-rej-rx-cond-ie-err%,%2G-ms-deactv-rej-rx-prot-err-unspec%,%2G-ms-deactv-rej-rx-apn-rest-incomap-actv-pdp%,%2G-ms-deactv-rej-rx-msg-not-compat-prot-state%,%2G-ms-deactv-rej-rx-rcvry-on-tmr-expiry%,%2G-sgsn-init-deact-req%,%2G-sgsn-init-deact-acc%,%2G-sgsn-init-deact-req%,%2G-ggsn-init-deact-req%,%2G-ggsn-init-deact-acc%,%2G-ggsn-init-deact-req%,%2G-hlr-init-deact-req%,%2G-hlr-init-deact-acc%,%2G-hlr-init-deact-req%,%2G-nw-deactv-rej-tx-odb%,%2G-nw-deactv-rej-tx-mbms-cap-insuff-res%,%2G-nw-deactv-rej-tx-llc-sndcp-fail-gb%,%2G-nw-deactv-rej-tx-insuff-res%,%2G-nw-deactv-rej-tx-miss-unkwn-apn%,%2G-nw-deactv-rej-tx-unkwn-pdp-addr%,%2G-nw-deactv-rej-tx-usr-auth-fail%,%2G-nw-deactv-rej-tx-actv-rej-ggsn%,%2G-nw-deactv-rej-tx-actv-rej-unspec%,%2G-nw-deactv-rej-tx-service-opt-no-support%,%2G-nw-deactv-rej-tx-service-opt-no-sub%,%2G-nw-deactv-rej-tx-svc-opt-temp-out-order%,%2G-nw-deactv-rej-tx-nsapi-already-used%,%2G-nw-deactv-rej-tx-reg-deactv%,%2G-nw-deactv-rej-tx-qos-not-acc%,%2G-nw-deactv-rej-tx-nwt-fail%,%2G-nw-deactv-rej-tx-reativation-req%,%2G-nw-deactv-rej-tx-no-feature-support%,%2G-nw-deactv-rej-tx-sem-err-tft-op%,%2G-nw-deactv-rej-tx-syn-err-tft-op%,%2G-nw-deactv-rej-tx-unknown-ctx%,%2G-nw-deactv-rej-tx-ctx-no-tft-already-actv%,%2G-nw-deactv-rej-tx-mcast-grp-mem-tout%,%2G-nw-deactv-rej-tx-sem-err-pkt-filter%,%2G-nw-deactv-rej-tx-syn-err-pkt-filter%,%2G-nw-deactv-rej-tx-invalid-trans-id%,%2G-nw-deactv-rej-tx-sem-incorrect-msg%,%2G-nw-deactv-rej-tx-inval-mand-info%,%2G-nw-deactv-rej-tx-msg-non-existent%,%2G-nw-deactv-rej-tx-ie-non-existent%
SGS NDS ch	SG SN D Sch ema	EMS,SGSND,%date%,%time%,%vpname%,%vpnid%,%servname%,%2G-nw-deactv-rej-tx-cond-ie-err%,%2G-nw-deactv-rej-tx-prot-err-unspec%,%2G-nw-deactv-rej-tx-apn-rest-incomap-actv-pdp%,%2G-nw-deactv-rej-tx-msg-not-compat-prot-state%,%2G-nw-deactv-rej-tx-rcvry-on-tmr-expiry%,%2G-total-sm-status-req-rx%,%2G-total-sm-status-req-tx%

Key	Description	Default Value in Config File
SGT PSch	SG TP Sch ema	EMS,SGTP,%date%,%time%,%vpn-name%,%vpn-id%,%service-name%,%sgtpc-cpc-req-v1-pri%,%sgtpc-cpc-req-v0-pri%,%sgtpc-cpc-req-sec%,%sgtpc-cpc-req-accept%,%sgtpc-cpc-rsp-v1-pri%,%sgtpc-cpc-rsp-v0-pri%,%sgtpc-cpc-rsp-sec%,%sgtpc-upc-req-v1-tx%,%sgtpc-upc-req-v0-tx%,%sgtpc-upc-req-v1-rx%,%sgtpc-upc-req-v0-rx%,%sgtpc-upc-req-accept-tx%,%sgtpc-upc-req-accept-rx%,%sgtpc-dpc-req-v1-tx%,%sgtpc-dpc-req-v0-tx%,%sgtpc-dpc-req-v1-rx%,%sgtpc-dpc-req-v0-rx%,%sgtpc-dpc-req-accept-tx%,%sgtpc-dpc-req-accept-rx%,%sgtpc-ident-req-v1-tx%,%sgtpc-ident-req-v0-tx%,%sgtpc-ident-req-v1-rx%,%sgtpc-ident-req-v0-rx%,%sgtpc-ident-req-accept-tx%,%sgtpc-ident-req-accept-rx%,%sgtpc-sgsn-ctxt-req-v1-tx%,%sgtpc-sgsn-ctxt-req-v0-tx%,%sgtpc-sgsn-ctxt-req-v1-rx%,%sgtpc-sgsn-ctxt-req-v0-rx%,%sgtpc-sgsn-ctxt-req-accept-tx%,%sgtpc-sgsn-ctxt-req-accept-rx%,%sgtpc-sgsn-ctxt-ack-accept-tx%,%sgtpc-sgsn-ctxt-ack-accept-rx%,%sgtpc-fwd-reloc-req-tx%,%sgtpc-fwd-reloc-req-rx%,%sgtpc-fwd-reloc-discard-tx%,%sgtpc-fwd-reloc-req-accept-tx%,%sgtpc-fwd-reloc-req-accept-rx%,%sgtpc-fwd-srnsctxt-req-tx%,%sgtpc-fwd-srnsctxt-req-rx%,%sgtpc-fwd-srnsctxt-discard-rx%,%sgtpc-fwd-srnsctxt-ack-tx%,%sgtpc-fwd-srnsctxt-ack-rx%,%sgtpc-fwd-reloc-compl-tx%,%sgtpc-fwd-reloc-compl-rx%,%sgtpc-reloc-cncl-req-tx%,%sgtpc-reloc-cncl-req-rx%,%sgtpc-reloc-cncl-req-accept-tx%,%sgtpc-reloc-cncl-req-accept-rx%,%sgtpc-v1-echo-req-tx%,%sgtpc-v1-echo-req-rx%,%sgtpc-v1-echo-rsp-tx%,%sgtpc-v1-echo-rsp-rx%,%sgtpu-ggsn-pkt-sent%,%sgtpu-rnc-pkt-sent%,%sgtpu-sgsn-pkt-sent%,%sgtpu-ggsn-pkt-rcvd%,%sgtpu-rnc-pkt-rcvd%,%sgtpu-sgsn-errind-sent%,%sgtpu-ggsn-errind-rcvd%,%sgtpu-rnc-errind-sent%,%sgtpu-rnc-errind-rcvd%,%sgtpu-total-active-ggsn%,%sgtpu-total-active-rnc%
SGT P2Sch	SG TP2 Sch ema	EMS,SGTP2,%date%,%time%,%vpn-name%,%vpn-id%,%service-name%,%sgtpc-total-cpc-req%,%sgtpc-cpc-req-denied%,%sgtpc-total-upc-req%,%sgtpc-upc-req-denied-tx%,%sgtpc-upc-req-denied-rx%,%sgtpc-total-dpc-req%,%sgtpc-dpc-req-denied-tx%,%sgtpc-dpc-req-denied-rx%,%sgtpc-ident-req-denied-tx%,%sgtpc-ident-req-denied-rx%,%sgtpc-sgsn-ctxt-req-denied-tx%,%sgtpc-sgsn-ctxt-req-denied-rx%,%sgtpc-sgsn-ctxt-ack-denied-tx%,%sgtpc-sgsn-ctxt-ack-denied-rx%,%sgtpc-fwd-reloc-denied-tx%,%sgtpc-fwd-reloc-denied-rx%,%sgtpc-fwd-srnsctxt-ack-denied-tx%,%sgtpc-fwd-srnsctxt-ack-denied-rx%,%sgtpc-fwd-rel-compl-ack-accept-tx%,%sgtpc-fwd-rel-compl-ack-accept-rx%,%sgtpc-fwd-rel-compl-ack-denied-tx%,%sgtpc-fwd-rel-compl-ack-denied-rx%,%sgtpc-reloc-cncl-denied-tx%,%sgtpc-reloc-cncl-denied-rx%,%sgtpc-ver-not-supported-rx%,%sgtpc-ver-not-supported-tx%,%sgtpc-supp-extn-hdr-notif-rx%,%sgtpc-supp-extn-hdr-notif-tx%,%sgtpu-ggsn-byts-sent%,%sgtpu-rnc-byts-sent%,%sgtpu-sgsn-byts-sent%,%sgtpu-ggsn-byts-rcvd%,%sgtpu-ggsn-pkt-queued%,%sgtpu-ggsn-byts-queued%,%sgtpu-ggsn-pkt-queue-full%,%sgtpu-ggsn-byts-queue-full%,%sgtpu-ggsn-pkt-unkwn-sess%,%sgtpu-ggsn-byts-unkwn-sess%,%sgtpu-ggsn-pkt-suspended-st%,%sgtpu-ggsn-byts-suspended-st%,%sgtpu-ggsn-pkt-invalid-msg-length%,%sgtpu-ggsn-byts-invalid-msg-length%,%sgtpu-rnc-byts-rcvd%,%sgtpu-rnc-pkt-queued%,%sgtpu-rnc-byts-queued%,%sgtpu-rnc-pkt-queue-full%,%sgtpu-rnc-byts-queue-full%,%sgtpu-rnc-pkt-unkwn-sess%,%sgtpu-rnc-byts-unkwn-sess%,%sgtpu-rnc-pkt-sess-dealloc%,%sgtpu-rnc-byts-sess-dealloc%,%sgtpu-rnc-pkt-invalid-msg-length%,%sgtpu-rnc-byts-invalid-msg-length%,%sgtpu-rnc-pkt-source-ip-viol%,%sgtpu-rnc-byts-source-ip-viol%,%sgtpu-sgsn-byts-rcvd%,%sgtpu-sgsn-pkt-queued%,%sgtpu-sgsn-byts-queued%,%sgtpu-sgsn-pkt-queue-full%,%sgtpu-sgsn-byts-queue-full%

Key	Description	Default Value in Config File
SGT P3Sch	SG TP3 Schema	EMS,SGTP3,%date%,%time%,%vpn-name%,%vpn-id%,%service-name%,%sgtpu-sgsn-pkt-unkwn-sess%,%sgtpu-sgsn-byts-unkwn-sess%,%sgtpu-sgsn-pkt-iu-release%,%sgtpu-sgsn-byts-iu-release%,%sgtpu-sgsn-pkt-invalid-msg-length%,%sgtpu-sgsn-byts-invalid-msg-length%,%sgtpc-v0-echo-req-tx%,%sgtpc-v0-echo-req-rx%,%sgtpc-v0-echo-rsp-tx%,%sgtpc-v0-echo-rsp-rx%,%sgtpu-ggsn-pkt-sess-dealloc%,%sgtpu-ggsn-byts-sess-dealloc%,%sgtpu-ggsn-pkt-page-fail%,%sgtpu-ggsn-byts-page-fail%,%sgtpu-ggsn-pkt-v0-seq-num-nt-pres%,%sgtpu-ggsn-byts-v0-seq-num-nt-pres%,%sgtpu-rnc-pkt-rau-in-active-st%,%sgtpu-rnc-byts-rau_in_active-st%,%sgtpu-rnc-pkt-reg_in_rau%,%sgtpu-rnc-byts-reg_in_rau%,%sgtpu-rnc-pkt-suspended-st%,%sgtpu-rnc-byts-suspended-st%,%sgtpu-sgsn-pkt-inconsistent-tunnel-state%,%sgtpu-sgsn-byts-inconsistent-tunnel-state%,%sgtpu-sgsn-pkt-sess-dealloc%,%sgtpu-sgsn-byts-sess-dealloc%,%sgtpu-total-ggsn-pkt-drop%,%sgtpu-total-ggsn-byts-drop%,%sgtpu-total-sgsn-pkt-drop%,%sgtpu-total-sgsn-byts-drop%,%sgtpu-total-rnc-pkt-drop%,%sgtpu-total-rnc-byts-drop%,%sgtpu-ggsn-pkt-drop-suspend-dealloc-st%,%sgtpu-ggsn-byts-drop-suspend-dealloc-st%,%sgtpu-rnc-pkt-rau-in-active-reg-st%,%sgtpu-rnc-byts-rau_in_active-reg-st%,%sgtpu-rnc-pkt-drop-suspended-dealloc-st%,%sgtpu-rnc-byts-drop-suspended-dealloc-st%,%sgtpu-total-pkt-ctxt-preserved%,%sgtpu-total-byts-ctxt-preserved%,%sgtpc-paket-discarded%,%sgtpc-v1-retrnas-echo-req-tx%,%sgtpc-v0-retrnas-echo-req-tx%,%sgtpu-errors-payload-length-mismatch%,%sgtpu-rnc-byts-unknown-version%,%sgtpu-rnc-pkt-unknown-version%,%sgtpu-ggsn-byts-unknown-version%,%sgtpu-sgsn-byts-unknown-version%,%sgtpu-ggsn-pkt-unknown-version%,%sgtpu-sgsn-pkt-unknown-version%,%iups-service%,%rnc-address%,%ggsn-address%
SCC PSch	SC CP Schema	EMS,SCCP,%date%,%time%,%sccp-nw-id%,%ssa-txed%,%ss-oos-grant-txed%,%ss-oos-req-txed%,%ssp-txed%,%ss-status-test-txed%,%ssa-rcvd%,%ss-oos-grant-rcvd%,%ss-oos-req-rcvd%,%ss-prohibit-rcvd%,%ss-status-test-rcvd%,%ss-congested-txed%,%ss-congested-rcvd%,%sccp-rtf-notrans-addr-nature%,%sccp-rtf-notrans-addr-specific%,%sccp-rtf-netwfail-pc-unavail%,%sccp-rtf-netw-conges%,%sccp-rtf-ssn-fail%,%sccp-rtf-ssn-conges%,%sccp-syntax-error%,%sccp-reassem-err-timer%,%sccp-reassem-err-sequence%,%sccp-reassem-err-space%,%sccp-hop-counter-violation%,%sccp-provider-ini-reset%,%sccp-provider-ini-rel%,%sccp-msg-toolarge-segment%,%sccp-segmentation-fail%,%sccp-total-msgs-handled%,%sccp-total-msgs-handl-local-ss%,%sccp-total-msgs-req-gtt%,%sccp-udt-sent%,%sccp-udt-rcvd%,%sccp-udts-sent%,%sccp-udts-rcvd%,%sccp-xudt-sent%,%sccp-xudt-rcvd%,%sccp-xudts-sent%,%sccp-xudts-rcvd%,%sccp-ludt-sent%,%sccp-ludt-rcvd%,%sccp-ludts-sent%,%sccp-ludts-rcvd%,%sccp-cr-sent%,%sccp-cr-rcvd%,%sccp-cc-sent%,%sccp-cc-rcvd%,%sccp-cref-sent%,%sccp-cref-rcvd%,%sccp-rsr-msg-sent%,%sccp-rsr-msg-rcvd%,%sccp-err-msg-sent%,%sccp-err-msg-rcvd%,%sccp-unequipped-user%,%sccp-reason-unknown%,%sccp-class-0-sent%,%sccp-class-0-rcvd%,%sccp-class-1-sent%,%sccp-class-1-rcvd%,%sccp-DT1-sent%,%sccp-DT1-rcvd%,%sccp-rel-compl-supv-fail%,%sccp-rel-disconn-req-rx%,%sccp-routing-fail-invalid-ins-routing-req%,%sccp-routing-fail-invalid-isni-routing-req%,%sccp-routing-fail-isni-constrained-routing%,%sccp-routing-fail-redundant-isni-routing-req%,%sccp-routing-fail-isni-identify-network%,%sccp-inactivity-rcv-tmr-expired%,%sccp-inactivity-test-sent%,%sccp-inactivity-test-received%

Key	Description	Default Value in Config File
SS7 RD1 Sch	SS7 RD1 Schema	EMS,SS7RD1,%date%,%time%,%ss7rd-number%,%ss7rd-asp_instance%,%ss7rd-sctp-init-tx%,%ss7rd-sctp-init-rx%,%ss7rd-sctp-init-ack-tx%,%ss7rd-sctp-init-ack-rx%,%ss7rd-sctp-shutdown-tx%,%ss7rd-sctp-shutdown-rx%,%ss7rd-sctp-shutdown-ack-tx%,%ss7rd-sctp-shutdown-ack-rx%,%ss7rd-sctp-cookie-tx%,%ss7rd-sctp-cookie-rx%,%ss7rd-sctp-cookie-ack-tx%,%ss7rd-sctp-cookie-ack-rx%,%ss7rd-sctp-data-tx%,%ss7rd-sctp-data-rx%,%ss7rd-sctp-sack-tx%,%ss7rd-sctp-sack-rx%,%ss7rd-sctp-shutdown-compl-tx%,%ss7rd-sctp-shutdown-compl-rx%,%ss7rd-sctp-heartbeat-tx%,%ss7rd-sctp-heartbeat-rx%,%ss7rd-sctp-heartbeat-ack-tx%,%ss7rd-sctp-heartbeat-ack-rx%,%ss7rd-sctp-abort-tx%,%ss7rd-sctp-abort-rx%,%ss7rd-sctp-bytes-tx%,%ss7rd-sctp-bytes-rx%,%ss7rd-mtp3-data-tx%,%ss7rd-mtp3-paused-tx%,%ss7rd-mtp3-resumed-tx%,%ss7rd-mtp3-congest-tx%,%ss7rd-mtp3-restrict-tx%,%ss7rd-mtp3-reset-begin-tx%,%ss7rd-mtp3-reset-end-tx%,%ss7rd-mtp3-reset-upu-tx%,%ss7rd-mtp3-data-rx%,%ss7rd-mtp3-paused-rx%,%ss7rd-mtp3-resumed-rx%,%ss7rd-mtp3-congest-rx%,%ss7rd-mtp3-restrict-rx%,%ss7rd-mtp3-reset-begin-rx%,%ss7rd-mtp3-reset-end-rx%,%ss7rd-mtp3-reset-upu-rx%,%ss7rd-m3ua-data-tx%,%ss7rd-m3ua-duna-tx%,%ss7rd-m3ua-dava-tx%,%ss7rd-m3ua-daud-tx%,%ss7rd-m3ua-scon-tx%,%ss7rd-m3ua-dupu-tx%,%ss7rd-m3ua-drst-tx%,%ss7rd-m3ua-regreq-tx%,%ss7rd-m3ua-regrsp-tx%,%ss7rd-m3ua-deregreq-tx%,%ss7rd-m3ua-deregrsp-tx%,%ss7rd-m3ua-aspup-tx%,%ss7rd-m3ua-aspup-ack-tx%,%ss7rd-m3ua-aspdn-tx%,%ss7rd-m3ua-aspdn-ack-tx%,%ss7rd-m3ua-aspac-tx%,%ss7rd-m3ua-aspac-ack-tx%,%ss7rd-m3ua-aspia-tx%,%ss7rd-m3ua-aspia-ack-tx%,%ss7rd-m3ua-hearbeat-tx%,%ss7rd-m3ua-hearbeat-ack-tx%,%ss7rd-m3ua-error-tx%,%ss7rd-m3ua-notify-tx%,%ss7rd-m3ua-data-rx%
SS7 RD2 Sch	SS7 RD2 Schema	EMS,SS7RD2,%date%,%time%,%ss7rd-number%,%ss7rd-asp_instance%,%ss7rd-m3ua-duna-rx%,%ss7rd-m3ua-dava-rx%,%ss7rd-m3ua-daud-rx%,%ss7rd-m3ua-scon-rx%,%ss7rd-m3ua-dupu-rx%,%ss7rd-m3ua-drst-rx%,%ss7rd-m3ua-regreq-rx%,%ss7rd-m3ua-regrsp-rx%,%ss7rd-m3ua-deregreq-rx%,%ss7rd-m3ua-deregrsp-rx%,%ss7rd-m3ua-aspup-rx%,%ss7rd-m3ua-aspup-ack-rx%,%ss7rd-m3ua-aspdn-rx%,%ss7rd-m3ua-aspdn-ack-rx%,%ss7rd-m3ua-aspac-rx%,%ss7rd-m3ua-aspac-ack-rx%,%ss7rd-m3ua-aspia-rx%,%ss7rd-m3ua-aspia-ack-rx%,%ss7rd-m3ua-hearbeat-rx%,%ss7rd-m3ua-hearbeat-ack-rx%,%ss7rd-m3ua-error-rx%,%ss7rd-m3ua-notify-rx%,%ss7rd-m3ua-lower-intf-pdu-tx%,%ss7rd-m3ua-lower-intf-pdu-rx%,%ss7rd-m3ua-upper-intf-pdu-tx%,%ss7rd-m3ua-upper-intf-pdu-rx%,%ss7rd-m3ua-down-no-route-found%,%ss7rd-m3ua-down-pc-unavailable%,%ss7rd-m3ua-down-msg-failed%,%ss7rd-m3ua-down-loadshare-failed%,%ss7rd-m3ua-up-no-route-found%,%ss7rd-m3ua-up-pc-unavailable%,%ss7rd-m3ua-up-msg-failed%,%ss7rd-m3ua-up-loadshare-failed%,%ss7rd-sctp-error-tx%,%ss7rd-sctp-error-rx%,%ss7rd-m3ua-lower-intf-pdusize-tx%,%ss7rd-m3ua-lower-intf-pdusize-rx%,%ss7rd-m3ua-upper-intf-pdusize-tx%,%ss7rd-m3ua-upper-intf-pdusize-rx%,%ss7rd-m3ua-down-pc-congested%,%ss7rd-m3ua-down-no-ppsp-avail%,%ss7rd-m3ua-down-no-nsap-avail%,%ss7rd-m3ua-down-data-conges-q%,%ss7rd-m3ua-down-data-as-pend-q%,%ss7rd-m3ua-up-pc-congested%,%ss7rd-m3ua-up-no-ppsp-avail%,%ss7rd-m3ua-up-no-nsap-avail%,%ss7rd-m3ua-up-data-conges-q%,%ss7rd-m3ua-up-data-as-pend-q%,%ss7rd-mtp3-user-part-unavail-tx%,%ss7rd-mtp3-traffic-restart-allowed-tx%,%ss7rd-mtp3-traffic-restart-waiting-tx%,%ss7rd-mtp3-user-part-unavail-rx%,%ss7rd-mtp3-traffic-restart-allowed-rx%,%ss7rd-mtp3-traffic-restart-waiting-rx%,%ss7rd-mtp3-msu-dropped-routing-err%

■ The bs.cfg File

Key	Description	Default Value in Config File
SS7 RD3 Sch	SS7 RD3 Schema	EMS,SS7RD3,%date%,%time%,%ss7rd-number%,%ss7rd-asp_instance%,%ss7rd-m3ua-ppsp-ps-id%,%ss7rd-m3ua-ppsp-instance%,%ss7-adjacent-point-code%,%ss7-adjacent-spc-not-accessible%,%ss7rd-m3ua-ppsp-aspac-ack-rx%,%ss7rd-m3ua-ppsp-aspac-ack-tx%,%ss7rd-m3ua-ppsp-aspac-rx%,%ss7rd-m3ua-ppsp-aspac-tx%,%ss7rd-m3ua-ppsp-aspdn-ack-rx%,%ss7rd-m3ua-ppsp-aspdn-ack-tx%,%ss7rd-m3ua-ppsp-aspdn-rx%,%ss7rd-m3ua-ppsp-aspdn-tx%,%ss7rd-m3ua-ppsp-aspia-ack-rx%,%ss7rd-m3ua-ppsp-aspia-ack-tx%,%ss7rd-m3ua-ppsp-aspia-rx%,%ss7rd-m3ua-ppsp-aspia-tx%,%ss7rd-m3ua-ppsp-aspup-ack-rx%,%ss7rd-m3ua-ppsp-aspup-ack-tx%,%ss7rd-m3ua-ppsp-aspup-rx%,%ss7rd-m3ua-ppsp-aspup-tx%,%ss7rd-m3ua-ppsp-congestion-count%,%ss7rd-m3ua-ppsp-congestion-duration%,%ss7rd-m3ua-ppsp-congestion-level1%,%ss7rd-m3ua-ppsp-congestion-level2%,%ss7rd-m3ua-ppsp-congestion-level3%,%ss7rd-m3ua-ppsp-congestion-queue-hw%,%ss7rd-m3ua-ppsp-congestion-queue-size%,%ss7rd-m3ua-ppsp-data-pdu-rx%,%ss7rd-m3ua-ppsp-data-pdusize-rx%,%ss7rd-m3ua-ppsp-data-pdusize-tx%,%ss7rd-m3ua-ppsp-data-pdu-tx%,%ss7rd-m3ua-ppsp-data-rx%,%ss7rd-m3ua-ppsp-data-tx%,%ss7rd-m3ua-ppsp-daud-rx%,%ss7rd-m3ua-ppsp-daud-tx%,%ss7rd-m3ua-ppsp-dava-rx%,%ss7rd-m3ua-ppsp-dava-tx%,%ss7rd-m3ua-ppsp-deregreq-rx%,%ss7rd-m3ua-ppsp-deregreq-tx%,%ss7rd-m3ua-ppsp-deregrsp-rx%,%ss7rd-m3ua-ppsp-deregrsp-tx%,%ss7rd-m3ua-ppsp-drst-rx%,%ss7rd-m3ua-ppsp-drst-tx%,%ss7rd-m3ua-ppsp-duna-rx%,%ss7rd-m3ua-ppsp-duna-tx%,%ss7rd-m3ua-ppsp-dupu-rx%,%ss7rd-m3ua-ppsp-dupu-tx%,%ss7rd-m3ua-ppsp-error-rx%,%ss7rd-m3ua-ppsp-error-tx%,%ss7rd-m3ua-ppsp-hearbeat-ack-rx%,%ss7rd-m3ua-ppsp-hearbeat-ack-tx%,%ss7rd-m3ua-ppsp-hearbeat-rx%,%ss7rd-m3ua-ppsp-hearbeat-tx%,%ss7rd-m3ua-ppsp-notify-rx%,%ss7rd-m3ua-ppsp-notify-tx%,%ss7rd-m3ua-ppsp-regreq-rx%,%ss7rd-m3ua-ppsp-regreq-tx%,%ss7rd-m3ua-ppsp-regrsp-rx%,%ss7rd-m3ua-ppsp-regrsp-tx%,%ss7rd-m3ua-ppsp-scon-rx%
SS7 RD4 Sch	SS7 RD4 Schema	EMS,SS7RD4,%date%,%time%,%ss7rd-number%,%ss7rd-asp_instance%,%ss7rd-m3ua-ppsp-scon-tx%,%ss7rd-m3ua-ppsp-unavailable-count%,%ss7rd-m3ua-ppsp-unavailable-duration%,%ss7rd-m3ua-ppsp-up-data-as-pend-q%,%ss7rd-m3ua-ppsp-up-data-conges-q%,%ss7rd-m3ua-ppsp-up-loadshare-failed%,%ss7rd-m3ua-ppsp-up-msg-failed%,%ss7rd-m3ua-ppsp-up-no-nsap-avail%,%ss7rd-m3ua-ppsp-up-no-ppsp-avail%,%ss7rd-m3ua-ppsp-up-no-route-found%,%ss7rd-m3ua-ppsp-up-pc-congested%,%ss7rd-m3ua-ppsp-up-pc-unavailable%
MIP V6H A Sch	MIP V6H A Schema	EMS,MIPV6HA,%date%,%time%,%vpname%,%vpnid%,%servname%,%servid%,%num-subscriber%,%aaa-attempt%,%aaa-success%,%aaa-totfail%,%aaa-actauthfail%,%aaa-misauthfail%,%bindupdrec-totrec%,%bindupdrec-totacc%,%bindupdrec-totdeny%,%bindupdrec-totdisc%,%bindupdrec-totcongdisc%,%ibindupdreq-receive%,%ibindupdreq-accept%,%ibindupdreq-deny%,%rbindupdreq-receive%,%rbindupdreq-accept%,%rbindupdreq-deny%,%deregreq-receive%,%deregreq-accept%,%deregreq-deny%,%horeq-receive%,%horeq-accept%,%horeq-deny%,%bindacksent-total%,%bindacksent-acceptreg%,%bindacksent-acceptdereg%,%bindacksent-deny%,%denyreason-badreq%,%denyreason-mismatchid%,%denyreason-mnauthfail%,%denyreason-admprohibit%,%denyreason-noresource%,%denyreason-simindexceed%,%denyreason-senderror%,%denyreason-unspereason%,%denyreason-msgidrequire%,%denyreason-dadfail%,%denyreason-nothomesubnet%,%denyreason-seqoutwindow%,%denyreason-regchadisallow%,%rrqdeny-admprohibit%,%rrqdeny-unknownha%,%datareceive-totpkt%,%datareceive-totpkt6in6%,%datareceive-totbyte%,%datareceive-totbyte6in6%,%datareceive-errorprotocol%,%datareceive-errorinvpkt%,%datareceive-errornosess%,%datasent-totpkt%,%datasent-totpkt6in6%,%datasent-totbyte%,%datasent-totbyte6in6%,%disconnect-lifetimeexp%,%disconnect-deregistration%,%disconnect-admdrop%,%disconnect-othreason%,%icmpv6-toobigreceive%,%icmpv6-toobigforward%,%icmpv6-toobiggenerate%
CONTEXT Sch	CONTEXT Schema	EMS,CONTEXT,%date%,%time%,%vpname%,%vpnid%,%sfw-total-rxpackets%,%sfw-total-rxbytes%,%sfw-total-txpackets%,%sfw-total-txbytes%,%sfw-total-injectedpkts%,%sfw-total-injectedbytes%,%sfw-dnlk-droppkts%,%sfw-dnlk-dropbytes%,%sfw-uplnk-droppkts%,%sfw-uplnk-dropbytes%,%sfw-total-malpackets%,%sfw-ip-discardpackets%,%sfw-ip-malpackets%,%sfw-icmp-discardpackets%,%sfw-icmp-malpackets%,%sfw-tcp-discardpackets%,%sfw-tcp-malpackets%,%sfw-udp-discardpackets%,%sfw-udp-malpackets%,%sfw-total-dosattacks%,%sfw-total-flows%

Key	Description	Default Value in Config File
CSCF1 Schema	CS CF 1 Schema	EMS,CSCF1,%date%,%time%,%vpname%,%vpnid%,%svcname%,%svcid%,%currusers%,%failedauth%,%regexp%,%callattr%,%callattx%,%callsuccrx%,%callsucctx%,%callfailrx%,%callfailtx%,%curscfssess%,%callrejpdf%,%callrejloc%,%sesstimeexp%,%hssacc%,%emergcalls%,%tollfreecalls%,%premservcalls%,%internationalcalls%,%longDistancecalls%,%opassisticalls%,%dirassistcalls%,%regreqrx%,%regreqtx%,%invreqrx%,%invreqtx%,%ackreqrx%,%ackreqtx%,%byereqrx%,%byereqtx%,%cancreqrx%,%cancreqtx%,%optreqrx%,%optreqtx%,%prackreqrx%,%prackreqtx%,%subreqrx%,%subreqtx%,%notreqrx%,%notreqtx%,%refreqrx%,%refreqtx%,%inforeqrx%,%inforeqtx%,%updregrx%,%updregrtx%,%msgreqrx%,%msgreqtx%,%pubreqrx%,%pubreqtx%,%trysprx%,%trysptx%,%rngrsprx%,%rngrsptx%,%fwdrsprx%,%fwdrsptx%,%quersprx%,%quersptx%,%prgrsprx%,%prgrsptx%,%200-regrsprx%,%200-regrsptx%,%200-invrsprix%,%200-invrsprix%,%200-byersprx%,%200-byersptx%,%200-cnlsprx%,%200-cnlsprx%,%200-optrsprx%,%200-optrsptx%,%200-prackrsprx%,%200-prackrsptx%,%200-subrsprx%,%200-subrsptx%,%200-notrsprx%,%200-notrsptx%,%200-infrsprx%,%200-infrsptx%,%200-updrsprx%,%200-updrsprx%,%200-pubrsprx%,%200-pubrsptx%,%200-refrsprx%,%200-refrsptx%,%200-msgrsprx%,%200-msgrsptx%,%202-refrsprx%,%202-refrsptx%,%202-subrsprx%,%202-subrsptx%,%mchrsprx%,%mchrsptx%,%mpersprx%,%mpersptx%,%mtersprx%,%mtersptx%,%upxrsprx%,%upxrsptx%,%altrsprx%,%altrsptx%,%brqerrrx%,%brqerrtx%,%uauererrrx%,%uauererrtx%,%foreerrrx%,%foreerrtx%,%nfderrrx%,%nfderrtx%,%mnaerrrx%,%mnaerrtx%,%nac406errrx%,%nac406errtx%,%parerrrx%,%parerrtx%,%ortoerrrx%,%ortoerrtx%,%gonerrrx%,%gonerrtx%,%crferrrx%,%crferrtx%,%relerrrx%,%relerrtx%,%rulerrrx%,%rulerrtx%,%umterrrx%,%umterrtx%,%uusererrrx%,%uusererrtx%,%bexerrrx%,%bexerrtx%,%exrerrrx%,%exrerrtx%,%itberrrx%,%itberrtx%,%tnaerrrx%,%tnaerrtx%,%tdnerrrx%,%tdnerrtx%,%ldterrrx%,%ldterrtx%
CSCF2 Schema	CS CF 2 Schema	EMS,CSCF2,%date%,%time%,%vpname%,%vpnid%,%svcname%,%svcid%,%tmherrrx%,%tmherrtx%,%adierrrx%,%adierrtx%,%amberrrx%,%amberrtx%,%bherrrx%,%bherrtx%,%rqcerrrx%,%rqcerrtx%,%namerrrx%,%namerrtx%,%tprerrrx%,%tprerrtx%,%udperrrx%,%udperrtx%,%ineerrrx%,%ineerrtx%,%nimerrrx%,%nimerrtx%,%bgterrrx%,%bgterrtx%,%suaerrrx%,%suaerrtx%,%gtterrrx%,%gtterrtx%,%bsverrrx%,%bsverrrtx%,%mtlerrrx%,%mtlerrtx%,%pcferrrx%,%pcferrtx%,%bewerrrx%,%bewerrtx%,%decerrrx%,%decerrtx%,%neaerrrx%,%neaerrtx%,%nac606errrx%,%nac606errtx%,%callsetuptime%,%callscounted%
SS7 LINK1 Schema	SS7 LINK1 Schema	EMS,SS7LINK1,%date%,%time%,%ss7rd-number%,%ss7-linkset-id%,%ss7-link-id%,%ss7-dpc-point-code%,%ss7-link-mtp3-changeover-order-tx%,%ss7-link-mtp3-changeover-order-rx%,%ss7-link-mtp3-changeover-order-ack-tx%,%ss7-link-mtp3-changeover-order-ack-rx%,%ss7-link-mtp3-changeback-declaration-tx%,%ss7-link-mtp3-changeback-declaration-rx%,%ss7-link-mtp3-changeback-ack-tx%,%ss7-link-mtp3-changeback-ack-rx%,%ss7-link-mtp3-emergency-changeover-tx%,%ss7-link-mtp3-emergency-changeover-rx%,%ss7-link-mtp3-emergency-changeover-ack-tx%,%ss7-link-mtp3-emergency-changeover-ack-rx%,%ss7-link-mtp3-inhibit-tx%,%ss7-link-mtp3-inhibit-rx%,%ss7-link-mtp3-inhibit-ack-tx%,%ss7-link-mtp3-inhibit-ack-rx%,%ss7-link-mtp3-uninhibit-tx%,%ss7-link-mtp3-uninhibit-rx%,%ss7-link-mtp3-uninhibit-ack-tx%,%ss7-link-mtp3-uninhibit-ack-rx%,%ss7-link-mtp3-inhibit-deny-tx%,%ss7-link-mtp3-inhibit-deny-rx%,%ss7-link-mtp3-force-uninhibit-tx%,%ss7-link-mtp3-force-uninhibit-rx%,%ss7-link-mtp3-local-inhibit-test-tx%,%ss7-link-mtp3-local-inhibit-test-rx%,%ss7-link-mtp3-remote-inhibit-test-tx%,%ss7-link-mtp3-remote-inhibit-test-rx%,%ss7-link-mtp3-connection-order-tx%,%ss7-link-mtp3-connection-order-rx%,%ss7-link-mtp3-connection-order-ack-tx%,%ss7-link-mtp3-connection-order-ack-rx%,%ss7-link-mtp3-test-tx%,%ss7-link-mtp3-test-rx%,%ss7-link-mtp3-test-ack-tx%,%ss7-link-mtp3-test-ack-rx%,%ss7-link-mtp3-sif-octet-tx%,%ss7-link-mtp3-sif-octet-rx%,%ss7-link-mtp3-sio-octet-tx%,%ss7-link-mtp3-sio-octet-rx%,%ss7-link-mtp3-sio-msu-tx%,%ss7-link-mtp3-tx-msu-dropped%,%ss7-link-mtp3-tx-msu-congestion-dropped%,%ss7-link-mtp3-invalid-pdu-rx%,%ss7-link-mtp3-congestion-threshold1%,%ss7-link-mtp3-congestion-threshold2%,%ss7-link-mtp3-congestion-threshold3%,%ss7-link-mtp3-unavail-duration%,%ss7-link-mtp3-congested-duration%

Key	Description	Default Value in Config File
GPRS2Schema	GP RS 2 Schema	EMS,GPRS2,%date%,%time%,%vpname%,%vpnid%,%servname%,%nse-id%,%sns-add-fail-sent-prot-err-unspec%,%sns-add-fail-rcv-inval-essential-param%,%sns-add-fail-sent-inval-essential-param%,%sns-add-fail-rcv-internal-err%,%sns-add-fail-sent-internal-err%,%sns-add-fail-rcv-inval-weight%,%sns-add-fail-sent-inval-weight%,%sns-add-fail-sent-no-rsp-from-peer%,%num-sns-delete-rcvd%,%num-sns-delete-sent%,%sns-delete-fail-rcv-pdu-not-compat-state%,%sns-delete-fail-sent-pdu-not-compat-state%,%sns-delete-fail-rcv-unknown-ip-endpt%,%sns-delete-fail-sent-unknown-ip-endpt%,%sns-delete-fail-rcv-unknown-ip-address%,%sns-delete-fail-sent-unknown-ip-address%,%sns-delete-fail-rcv-prot-err-unspec%,%sns-delete-fail-sent-prot-err-unspec%,%sns-delete-fail-rcv-inval-essential-param%,%sns-delete-fail-sent-inval-essential-param%,%sns-delete-fail-rcv-internal-err%,%sns-delete-fail-sent-internal-err%,%sns-delete-fail-sent-no-rsp-from-peer%,%num-sns-cw-rcvd%,%num-sns-cw-sent%,%sns-cw-fail-rcv-pdu-not-compat-state%,%sns-cw-fail-sent-pdu-not-compat-state%,%sns-cw-fail-rcv-inval-weight%,%sns-cw-fail-sent-inval-weight%,%sns-cw-fail-rcv-unknown-ip-endpt%,%sns-cw-fail-sent-unknown-ip-endpt%,%sns-cw-fail-rcv-unknown-ip-addr%,%sns-cw-fail-sent-unknown-ip-addr%,%sns-cw-fail-rcv-prot-err-unspec%,%sns-cw-fail-sent-prot-err-unspec%,%sns-cw-fail-rcv-inval-essential-param%,%sns-cw-fail-sent-inval-essential-param%,%sns-cw-fail-sent-internal-err%,%sns-cw-fail-sent-internal-err%,%sns-cw-fail-sent-no-rsp-from-peer%,%sns-num-ack-rcvd%,%sns-num-ack-sent%,%sns-num-unknown-msg%,%sns-num-status-pdu-sent%,%bssgp-total-usr-req-drop%,%bssgp-usr-req-drop-unknown-bvci%,%bssgp-usr-req-drop-blocked-bvc%,%bssgp-usr-req-drop-encoding-fail%,%bssgp-usr-req-drop-bvc-flow-ctrl-rcvd%
	GP RS 3 Schema	EMS,GPRS3,%date%,%time%,%vpname%,%vpnid%,%servname%,%nse-id%,%bssgp-usr-req-drop-bvc-flow-ctrl-ack-sent%,%bssgp-usr-req-drop-block-rcvd%,%bssgp-usr-req-drop-block-ack-sent%,%bssgp-usr-req-drop-unblock-rcvd%,%bssgp-usr-req-drop-unblock-ack-sent%,%bssgp-usr-req-drop-bvc-reset-sent%,%bssgp-usr-req-drop-bvc-reset-rcvd%,%bssgp-usr-req-drop-bvc-reset-ack-sent%,%bssgp-usr-req-drop-bvc-reset-ack-rcvd%,%bssgp-flush-llc-msg-sent%,%bssgp-flush-llc-ack-msg-rcvd%,%bssgp-cs-paging-msg-sent%,%bssgp-ps-paging-msg-sent%,%bssgp-ra-cap-update-msg-rcvd%,%bssgp-ra-cap-update-ack-msg-sent%,%bssgp-radio-status-msg-sent%,%bssgp-radio-status-msg-rcvd%,%bssgp-suspend-msg-rcvd%,%bssgp-suspend-ack-msg-sent%,%bssgp-suspend-nack-msg-sent%,%bssgp-resume-msg-rcvd%,%bssgp-resume-ack-msg-sent%,%bssgp-resume-nack-msg-sent%,%bssgp-downlink-unitdata-sent%,%bssgp-uplink-unitdata-rcvd%,%bssgp-llc-pdu-discard-msg-rcvd%,%bssgp-ms-flow-ctrl-msg-rcvd%,%bssgp-ms-flow-ctrl-ack-msg-sent%,%bssgp-bvc-status-msg-rcvd%,%bssgp-bvc-status-msg-sent%,%sndcp-xid-req-ms-init%,%sndcp-xid-ind-sgsn-init%,%sndcp-npdus-ack-rcvd-ms%,%sndcp-npdus-ack-sent-ms%,%sndcp-npdus-uack-rcvd-ms%,%sndcp-npdus-uack-sent-ms%,%sndcp-bytes-ack-rcvd-ms%,%sndcp-bytes-ack-sent-ms%,%sndcp-bytes-uack-rcvd-ms%,%sndcp-bytes-uack-sent-ms%,%sndcp-pdu-drop-rcvd-from-llc%,%sndcp-inval-ref-num-rcvd-from-llc%,%sndcp-npdu-sent-sgsn-irau%,%sndcp-npdu-rcvd-sgsn-irau%,%llc-data-req-rx%,%llc-data-cfm-tx%,%llc-data-ind-tx%,%llc-data-sent-ind-tx%,%llc-unit-data-req-rx%,%llc-unit-data-ind-tx%,%llc-discarded-frames-rx%,%llc-discarded-frames-tx%,%llc-error-frames-rx%,%llc-unrecog-frames-rx%,%llc-xid-collisions%,%llc-ciphering-errors%,%llc-fcs-errors%,%llc-frame-stats-ui-rx%,%llc-frame-stats-ui-tx%


Directory	Description	Minimum Value	Maximum Value	Default Value
Format: This section deals with the format string other than the subsystem schemas.				
RemoteFile	The parameter values should not be edited manually. Used by the WEM server.			
Tolerance: These values indicate that the server will search records within a range (below and above the expected timestamp) if the exact record is not present. All values are in seconds.				
5MinTolerance		0	150 (2.5 mins)	0


■ The bs.cfg File



Directory	Description	Minimum Value	Maximum Value	Default Value
15MinTolerance		0	450 (7.5 mins)	0
30MinTolerance		0	900 (15 mins)	0
45MinTolerance		0	1350 (22.5 mins)	0
HourTolerance		0	1800 (30 mins)	0
DayTolerance		0	43200 (12 hrs)	0
MonthTolerance		0	1296000 (15 days)	0
StartDateTime: These values indicate the date and time for fetching the records in case of daily and monthly report type respectively.				
DailyStartTime	From this value, we can configure the time field for daily report type if DailyStartTime is set to 20, then record present at 08:00 PM of every day will be fetched from the database.	23 (11:00 PM)	0 (12:00 AM)	12
MonthlyStartDate	From this value, we can configure the day field for monthly report type if MonthlyStartDate is set to 15, then record present at day 15 of every month will be fetched from the database.	1	31	15

The bsparser.cfg File



This file provides parameters for specifying such information as the directories in which bulk statistics records received from the chassis are stored and archived after they are processed, in addition to time intervals for polling and record transfer.

 **Important:** Any change in the configuration files will restart the server resulting in client restart.

 **Caution:** Several parameters contained in this file are configurable through the installation process.

Key	Description	Minimum Value	Maximum Value	Default Value
Directory: This section contains the directory path required for bulk statistics.				
Ftp	<p>Base directory for bulkstat FTP from the ASR 5000. The FTP directory entry can be changed to one of the available directories in the host file system. If the specified directory does not exist, then the bulkstats files will be configured for FTPing in <i><serverpath>/data/</i>.</p> <hr/> <p> Important: The FTP directory path entry should always be an absolute path and not a relative path.</p>	--	--	<i><serverpath>/data/</i>
SecFtp	<p>Base directory for bulkstat secondary FTP from the ASR 5000. The FTP directory entry can be changed to one of the available directories in the host file system. If the specified directory does not exist, then the bulkstats files will be configured for FTPing in <i><serverpath>/data/</i>.</p> <hr/> <p> Important: The FTP directory path entry should always be an absolute path and not a relative path.</p>	--	--	<i><serverpath>/data/</i>

■ The bsparser.cfg File

Key	Description	Minimum Value	Maximum Value	Default Value
Archive	<p>It is recommended that the WEM server installer/admin changes this entry to one of the available directories in the host file system. This directory contains the archive of the bulkstat files from the ASR 5000.</p> <p>If the directory pointed by this entry is inaccessible or does not exist, then the files FTPed by the ASR 5000 will not be archived.</p> <hr/> <p> Important: The Archive directory path entry can be an absolute or relative path.</p> <hr/>	--	--	./bulkstat_archive/
	<p>FileArchiveEnable: This flag enables/disables the archiving of bulkstat files.</p> <ul style="list-style-type: none"> • 1 = Enables the archiving of bulkstat files • 0 = Disables this functionality 	--	--	0
Polling: This section contains parameters that are used for optimization of the bulkstatistics module in terms of polling.				
PollInterval	Poll interval in seconds.	10 sec	60 sec	30 sec
PoolEnable	<ul style="list-style-type: none"> • 1 = Enables the thread pool • 0 = Disables the thread pool 	--	--	1
Size	<p>Size of the thread pool.</p> <hr/> <p> Important: This value should not be greater than the MaxDbConnPool parameter defined in the <i>etc/db.cfg</i> file.</p> <hr/>	5	100	10
FetchConfig	<p>Fetch bulkstat configuration parameters from the ASR 5000.</p> <ul style="list-style-type: none"> • 1 = Fetch • 0 = Do not fetch 	--	--	0
LatencyPeriod	Tolerance period to be considered for Bulkstat FTP operation.	0 min	2 min	2 min
Queue: This section contains parameters that are used for optimization of the bulkstatistics module in terms of queuing.				
QueueInterval	Queue interval in seconds.	10 sec	60 sec	10 sec
DBSession: This section contains parameters that are used for optimization of the bulkstatistics module for database calls in terms of DB sessions.				

Key	Description	Minimum Value	Maximum Value	Default Value
PermanentSession	<ul style="list-style-type: none"> PermanentSession 1 = DB actions performed using permanent database sessions PermanentSession 0 = DB actions performed using temporary database sessions 	--	--	0
Parser: This section contains parameters that are used for connection to the Parser Server process.				
ParserPort	The TCP port to which the WEM server binds.	1025	65535	22224

The bsserver.cfg File

This file provides parameters pertaining to the XML-parsing of bulk statistic records received from the chassis. These parameters provide the ability to enable/disable XML parsing and to specify the directory, in which parsed records are to be stored, time intervals for checking for new records, and whether a single XML file should be generated for all subsystems or one XML file per subsystem in accordance with 3GPP TS 32.401 V4.1.0 and 3GPP TS 32.435 V6.2.0.



Important: Any change in the configuration files will restart the server resulting in client restart.



Caution: Several parameters contained in this file are configurable through the installation process.

Key	Description	Minimum Value	Maximum Value	Default Value
Port: This section contains the server port to which the BulkStat server binds.				
ServerPort	The TCP port to which the WEM server binds.	1025	65535	22223
Directory: This section contains the directory path required for the BulkStat server.				
XMLDir	Base directory path where the measurement files are to be generated.	--	--	<EMSServerInstallDir>/xmldata /
FTP	Base directory for bulkstat FTP from the ASR 5000. The FTP directory entry can be changed to one of the available directories in the host file system. If the specified directory does not exist, then the bulkstats files will be configured for FTPing in <serverpath>/data/.	--	--	<serverpath>/data/
PMFormat	This configurable states the PM table format.	--	--	ST16
XMLDataEnable	<ul style="list-style-type: none"> 1 = Enables the XML Data Parsing 0 = Disables the XML Data Parsing 	--	--	0
XMLFileType	<ul style="list-style-type: none"> 1 = XML file containing all the subsystem reports 0 = XML file containing a single subsystem report 	--	--	0

Key	Description	Minimum Value	Maximum Value	Default Value
ASCIIFileGeneration	<ul style="list-style-type: none"> 1 = Creates ASCII file as per the subsystem report 0 = Creates XML file as per the subsystem report 	--	--	0
XMLFileFormat	<ul style="list-style-type: none"> 1 = Creates XML measurement report file using the enhanced 3GPP format (V6.2.0) 0 = Creates XML measurement report file using the old format 	--	--	0
Interval: This section contains the interval parameters for polling operations.				
DataPollInterval	Polling interval in seconds to check the availability of new data samples in the WEM bulkstat database subsystem table.	5 sec	3600 sec	60 sec
SynchInterval	Synchronization interval in seconds to check the availability of new NE (ASR 5000) for polling the data samples in the WEM bulkstat database subsystem table.	5 sec	3600 sec	120 sec
GranularityPeriod	Granularity period to generate XML report files. The following values are only supported: 300 sec (5 min), 900 sec (15 min), 1800 sec (30 min), 3600 sec (60 min) All values other than the above will be ignored and the default value will be used.	300 sec	3600 sec	300 sec
Thread Pool: This section contains the configuration values for the thread pool.				
Size	Size of the thread pool.	5	20	10
Access Time: This section contains the configuration values for overriding the bulkstat XML measurement generation timestamp.				
OverrideLastAccessFlag	<p>The bulkstat server utility can be made to generate complete data from the last record by changing the Override Last Access Flag.</p> <ul style="list-style-type: none"> OverrideLastAccessFlag = 1 (Set to ON) OverrideLastAccessFlag = 0 (Set to OFF) 	--	--	0
XML Data: The following values are the default data values for the XML Measurement file for the 3GPP recommended XML nodes. For more information, refer to the 3GPP TS 32.401 V4.1.0 (2001-12) document.				
ffv	File format version applied by the EM	--	--	--

■ The bsserver.cfg File

Key	Description	Minimum Value	Maximum Value	Default Value
sn	Sender Name	--	--	--
st	Sender Type	--	--	--
vn	Vendor Name	--	--	--
neun	NE User Name	--	--	--
nedn	NE Distinguish Name	--	--	--
nesw	NE Software	--	--	--
rsf	Representative Suspect Flag: Used as an indication to stop collecting data from any NE in abnormal conditions. <ul style="list-style-type: none"> • 0 (FALSE) in the case of normal condition • 1 (TRUE) if not normal condition 	--	--	0
sf	Suspect Flag: Used as an indication of quality for the scanned data. <ul style="list-style-type: none"> • 0 (FALSE) in the case of reliable data • 1 (TRUE) if not reliable 	--	--	0
es	Error State: Used as an indication to state that the statistics data collection is not completed due to the error condition. <ul style="list-style-type: none"> • 0 (FALSE) in the case of normal condition • 1 (TRUE) if not normal condition 	--	--	0
UseIpAddress	Use ASR 5000 IP address as an NE User Name. <ul style="list-style-type: none"> • 0: Do not use IP address as a neun, that is, use host name as neun. • 1: Use IP address as neun. 	--	--	0
Timezone: This section contains the configuration values for overriding the bulkstat XML measurement generation timestamp.				

Key	Description	Minimum Value	Maximum Value	Default Value
TimezoneOffsetToUTC	<p>Configuration for time zone offset for XML file creation. NE generates data in UTC time zone. The timestamp values of the measurement data can be converted to specific time zone by applying the differential value of time in hhmm wrt UTC. <code>TimezoneOffsetToUTC=signhhmm</code></p> <ul style="list-style-type: none"> • Sign (optional) indicates the sign of the local time differential from UTC (+ or -). '+' is considered if sign is not given. • hh is the two digit number of hours of the local time differential from UTC (-12..+13). • mm is the two digit number of minutes of the local time differential from UTC (00..59). <p>For example:</p> <ul style="list-style-type: none"> • For IST: Use <code>TimezoneOffsetToUTC=+0530</code> indicating 05 hours, 30 mins ahead of UTC • For KST: Use <code>TimezoneOffsetToUTC=+0900</code> indicating 09 hours, 00 mins ahead of UTC • For EST: Use <code>TimezoneOffsetToUTC=-0500</code> indicating 05 hours, 00 mins behind UTC 	--	--	+0000
TimezoneOffsetFromUTC	<p>Use the <code>TimezoneOffsetFromUTC</code> parameter for all ASR 5000s to generate XML report file. <code>UsePerNETimezone=0</code></p> <ul style="list-style-type: none"> • 0 = Use <code>TimezoneOffsetFromUTC</code> parameter as a time zone to generate report file. • 1 = Use time zone from MISC table in database to generate report file. 	--	--	+0000

■ The bsserver.cfg File

Key	Description	Minimum Value	Maximum Value	Default Value
UsePerNETimezone	This parameter indicates whether to use time zone as per ASR 5000.	--	--	0
BSFTP: The bulkstat server transfers the generated XML file to NM using FTP. This section defines the default values for FTP.				
BSFTPPerformOperation	Flag to indicate whether bulkstat server should perform FTP operation of generated XML files or perform local storage. Values: <ul style="list-style-type: none"> • 0 = Disable FTP operation • 1 = Enable FTP operation 	--	--	0
BSFTPUserName	User name field for FTP operation.	--	--	
BSFTPPassword	Password field for FTP operation.	--	--	
HostIPAddr	IP Address of the host system where the file is to be transferred.	--	--	
HostBaseDir	FTP directory where the file is to be stored on the host system.	--	--	
PoolSize	Pool size for threads.	--	--	<ul style="list-style-type: none"> • 10 for FTP • 3 for SFTP
PollInterval	Poll interval	--	--	
BSFTPMaxRetries	Maximum retries if FTP failed.	--	--	
BSFTPRetryInterval	Interval between retries of FTP.	--	--	
BSUseSFTP	Flag to indicate whether the bulkstat server should use SFTP/FTP to transfer the XML file to NM. Changing the value of BSUseSFTP requires bulkstat server restart. When BSUseSFTP is set to 0, increase the value of PoolSize to 10. When BSUseSFTP is set to 1, reduce the value of PoolSize to 3. Values: <ul style="list-style-type: none"> • 0 = Disable SFTP • 1 = Enable SFTP 	--	--	0

The bstca.cfg File

This file contains parameters pertaining to the threshold configuration for bulk statistic counters. This file includes the threshold values, that is, clear threshold and set threshold to notify and clear SNMP traps accordingly. These threshold values are specified based on the threshold limit.

Filename	Description
bstca.cfg	<p>This file specifies the threshold configuration for bulkstat counters.</p> <ul style="list-style-type: none"> • Needs a Bulkstat Parser restart • Can be changed by the use <p>The format is as follows: [schema name] counter name=clear threshold,set threshold <i>Example of the threshold configuration:</i> [mipha] expiry=10,20 recv-total=20,40 Threshold Value (Clear) is less than or equal to 10 for delta value of the bulkstat counter “expiry”. Threshold Value (Set) is more than or equal to 20 for delta value of the bulkstat counter “expiry”.</p>


The cdp.cfg File

This file contains CDP specific parameters that are configured for generation of ad-hoc reports. The parameters are also configured to export Optimized Customer Master Database (OPTCMDB) files to CDP.

Key	Description	Minimum Value	Maximum Value	Default Value
UNKNOWNURL: This section displays unknown URL database files Import interval related information.				
UnknownUrlImportInterval	This specifies time interval in hours for Content Filtering Configuration to import various databases from CDP	1 hr	720 hrs (30 days; 1 Month)	24 hrs
Reports: This section displays the report related information.				
MaxNumberOfReports	This specifies the maximum number of reports that can be present in the <i>reports/cf/</i> directory.	50	500	250
ReportDirSizeLimit	This specifies the directory size of the reports in MB.	100	1024	500

The cf.cfg File

This file contains parameters pertaining to content filtering.

 **Important:** Any change in the configuration files will restart the server resulting in client restart.


Directory	Description	Minimum Value	Maximum Value	Default Value
ContentFiltering				
EnableCFFeature	Flag to enable/disable the CF features in WEM. Needs a WEM Server restart. Setting this flag to 1 will enable the CF features in WEM. Values: <ul style="list-style-type: none"> • 1: Enable • 0: Disable 	--	--	0
CFStatistics				
CFStatsInterval	Time Interval for generating statistics. This is the time interval in seconds after which the statistics will be generated for CF.	60 sec	1800 sec	300 sec
CFBackupArchiveDatabase: This section contains the config variables related to archive operation of various CF databases.				
FullDbFilesBackupLimit	This specifies the number of backups to be maintained by Content Filtering Server for Full databases.	1	10	4
IncrementalDbFilesBackupLimit	This specifies the number of days incremental backup is to be maintained for incremental databases.	1 day	90 days	30 days
ArchiveDbFiles	This allows user to enable/disable archiving of database files once outdated. Possible values: ENABLE, DISABLE	--	--	DISABLE
ArchivePath	This specifies the path where archive files are maintained. ArchivePath = <i>./flash/archive/</i>	--	--	--
CFTRAP				
CFSnmpVersion	SNMP version for generation of WEM traps.	--	--	--
CFTrapReceiverHost	Alarm receiver machine IP Address. <ul style="list-style-type: none"> • Needs a WEM Server restart • Can be changed by the user 	--	--	--



■ The cf.cfg File

Directory	Description	Minimum Value	Maximum Value	Default Value
CFTrapReceiverPort	<p>The port on which traps will be generated by the WEM server.</p> <ul style="list-style-type: none">• Needs a WEM Server restart• Can be changed by the user	1	65535	162

The configupdate.cfg File


This file contains parameters pertaining to chassis software configuration updates using the Web Element Manager. It includes the directory in which the configuration files are stored and the directory to which configuration update log files can be stored.


 **Important:** Any change in the configuration files will restart the server resulting in client restart.


Directory	Description	Minimum Value	Maximum Value	Default Value
ConfigUpdate				
LogDirPath	<p>The directory where all generated log files are stored. It can be changed by the user. If the specified directory does not exist, then the config files will be stored in <i>./flash/ConfigUpdate/log</i>.</p> <hr/> <p> Important: The config file directory path entry should always be an absolute path and not a relative path.</p>	1	80	./flash/ConfigUpdate/log
ConfigFileDirPath	<p>The directory where all configuration files to be loaded on the ASR 5000 are stored. It can be changed by the user. If the specified directory does not exist, then the config files will be stored in <i>./flash/ConfigUpdate/config</i>.</p> <hr/> <p> Important: The config file directory path entry should always be an absolute path and not a relative path.</p>	1	80	./flash/ConfigUpdate/config

The db.cfg File

This file contains parameters pertaining to the WEM's use of the Postgres database. It identifies the various databases and their locations.

 **Important:** Any change in the configuration files will restart the server resulting in client restart.

 **Caution:** Improper configuration of this file can adversely affect WEM operation. To ensure proper operation of the Web Element Manager, do not edit the parameters in these files.

Directory	Description	Minimum Value	Maximum Value	Default Value
Database	<p>This file contains parameters pertaining to the Database Name, Database type, Host IP Address, Port, User Name and Password of the Web Element Manager application. Here, Database means Postgres, Oracle, etc. and CommitRecTime is in seconds.</p> <hr/> <p> Important: Any change in the configuration files will restart the server resulting in client restart.</p> <hr/> <p>The format is as follows: DbName,Database,HostAddress,Port,UserName,Password</p> <ul style="list-style-type: none"> • CONFIGDBASE = configdb,postgres,127.0.0.1,5432,postgres,postgres • TRAPDBASE = trapdb,postgres,127.0.0.1,5432,postgres,postgresMI • BDBASE = mibdb,postgres,127.0.0.1,5432,postgres,postgresAU • DITDBASE = auditdb,postgres,127.0.0.1,5432,postgres,postgresB • SDBASE = bsdb,postgres,127.0.0.1,5432,postgres,postgresP2P • DBASE = p2pdb,postgres,127.0.0.1,5432,postgres,postgresNB • DBASE = nbdb,postgres,127.0.0.1,5432,postgres,postgres 	--	--	--
MaxDbConnPool	Size of the DB connection pool.	1	50	25
PostgresDIR	This specifies the path of the Postgres directory. PostgresDIR = /<ems_dir>/postgres	--	--	--

The emslic.cfg File

This file contains license information for the WEM Server installation.

Key	Description	Value	Default Value
License: This is the WEM License file.			
LicenseKey	License key for using WEM. <ul style="list-style-type: none">• Needs a WEM Server restart• Can be changed by the user	LicenseKey = Basic Customer-EU2 Customer-EU4	No default value

The fm.cfg File

This file contains parameters pertaining to the handling of received alarms. It provides parameters for configuring color indicators for the various severities, E-mail server information for alert notifications, and SNMP operation.

Key	Description	Minimum Value	Maximum Value	Default Value
<p>SEVERITY: This section describes the severity configuration for traps that contain various priorities and the color in which the traps of that severity should be displayed.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 				
Severity Name	<p>The severity name is similar to the severity color. The format is as follows: Severity Name = Severity color Severity color should be specified in a CSV format. (Comma Separated Values: red, green, blue) Valid color values range from 0 to 255. The following are some usual colors with CSV format: 255,0,0 - red 0,255,0 - green 0,0,255 - blue 255,192,203 - pink 190,190,190 - gray 255,255,255 - white 0,0,0 - black 255,255,0 - yellow 0,255,255 - cyan 169,169,169 - darkgray 211,211,211 - lightgray 255,0,255 - magenta 255,165,0 - orange 165,42,42 - brown Color entry can be of a decimal, octal or hexadecimal form.</p> <ul style="list-style-type: none"> A decimal constant begins with a non-zero digit, and consists of a sequence of decimal digits. An octal constant consists of the prefix 0 optionally followed by a sequence of the digits 0 to 7 only. A hexadecimal constant consists of the prefix 0x or 0X followed by a sequence of the decimal digits and letters a (or A) to f (or F) with values 10 to 15 respectively. 	--	--	Default color (red, green, blue) value is 127

Key	Description	Minimum Value	Maximum Value	Default Value
Severity Level	<p>The Severity level (number) for the nth row in the SEVERITY section is n. For example: Clear severity level is 6 Minor severity level is 4 The severity levels are as follows:</p> <ul style="list-style-type: none"> Severity level 1: This specifies “Indeterminate” alarm with color code “140,140,0”. Severity level 2: This specifies “Critical” alarm with color code “255,0,0”. Severity level 3: This specifies “Major” alarm with color code “255,0,255”. Severity level 4: This specifies “Minor” alarm with color code “204,153,0”. Severity level 5: This specifies “Warning” alarm with color code “0,145,145”. Severity level 6: This specifies “Clear” alarm with color code “0,145,0”. 	--	--	--
EMAIL: This section describes the E-mail configuration for traps.				
MailFrom	<p>E-mail address of the e-mail notification originator.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	--	--	No default value
MailServerAddr	<p>Address in DNS or IP address format on which the SMTP (e-mail) server should be running.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	--	--	No default value
MailServerPort	<p>Port number on which the e-mail server should be running.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	1	65535	25
DisconnectTime	<p>Time out for mail server TCP connection in seconds.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	10 secs	3600 secs	10 secs
URLPath	<p>URL path on which the WEM server should be running.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	--	--	No default value

■ The fm.cfg File


Key	Description	Minimum Value	Maximum Value	Default Value
SCRIPT: This section describes the script configuration for traps.				
ScriptSrvPort	Port number on which the script server should be running. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	1	65535	22225
ScriptDirPath	Base directory in which the scripts to be executed are stored. <ul style="list-style-type: none"> Needs a WEM Server restart Must not be changed by the user - There is a separate directory that exists for the user. 			<serverpath>/scripts
UserScriptDirPath	Base directory in which the user scripts to be executed are stored. Needs a WEM Server restart			<serverpath>/alarmscripts
TRAP: This section describes the flags for logging traps.				
SnmpTrapPort	The port on which traps will be received by the WEM server. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user Server must be run as root in order to receive traps on privileged ports (1 to 1024) 	1	65535	162
SelectionFlag	Flag to enable or disable e-mail, notification, forwarding, script execution and syslog. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user Possible values: ALL, IMG ALL: Processing the traps when it is ASR 5000 or non-ASR 5000 IMG: Only ASR 5000 traps are processed	--	--	ALL
LoggingFlag	Flag for logging traps. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user Possible values: ALL, IMG ALL: All traps are logged. IMG: Only ASR 5000 traps are logged.	--	--	ALL

Key	Description	Minimum Value	Maximum Value	Default Value
BroadCastFlag	<p>Flag for receiving broadcast-traps (case insensitive).</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>Possible values: ENABLE, DISABLE ENABLE: Receiving broadcast traps DISABLE: Don't receive broadcast traps.</p>	--	--	DISABLE
GlobalOverride	<p>Flag for global override.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>Possible values: ENABLE, DISABLE ENABLE: Disable sending e-mail and executing script DISABLE: Enable e-mail and script</p>	--	--	DISABLE
SupressEmsTraps	<p>Flag for suppressing WEM-only Traps.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>Possible values: ENABLE, DISABLE ENABLE: Disable generation of WEM traps DISABLE: Enable generation of WEM traps</p>	--	--	DISABLE
SnmpVersion	<p>SNMP Version for generation of WEM traps. The supported versions are:</p> <ul style="list-style-type: none"> SNMPv1 SNMPv2c 	--	--	--
ProxyFwd	<p>Flag for configuring WEM server as proxy to forward the received SNMP traps. In case of forwarding the received SNMP traps as SNMPv2 traps, we need to - # translate the notification parameters to appropriate SNMPv2 parameters. Flag for suppressing WEM-only Traps.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>Possible values: ENABLE, DISABLE ENABLE: Disable generation of WEM traps DISABLE: Enable generation of WEM traps</p>			ENABLE
SYSLOG: This section describes the Syslog server configuration for traps.				
LogHost	<p>Address of the machine on which syslog should be running.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 			127.0.0.1

■ The fm.cfg File

Key	Description	Minimum Value	Maximum Value	Default Value
LogPort	Port number on which syslog should be running. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	1	65535	514
Facility	Syslog facility. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user FACILITY contains the following possible values: LOG_KERN,LOG_USER,LOG_MAIL, LOG_DAEMON, LOG_AUTH,LOG_SYSLOG, LOG_LPR,LOG_NEWS,LOG_UUCP,LOG_CRON,LOG_LOCAL0, LOG_LOCAL1, LOG_LOCAL2,LOG_LOCAL3,LOG_LOCAL4,LOG_LOCAL5,LOG_LOCAL6,LOG_LOCAL7	--	--	LOG_LOCAL3
Priority	Syslog priority. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user PRIORITY contains the following possible values: LOG_EMERG, LOG_ALERT, LOG_CRIT, LOG_ERR, LOG_WARNING, LOG_NOTICE, LOG_INFO, LOG_DEBUG	--	--	LOG_INFO
EVENTSERVICE				
LogCLIShowCommands	Flag to enable(1)/disable(0) the logging of “show” CLI commands. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	0	1	1
AUDIO				
AudioDir	Audio directory which contains audio files. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 			No default value

Key	Description	Minimum Value	Maximum Value	Default Value
GROUP	<p>Alarm group configuration.</p> <ul style="list-style-type: none"> • Needs a WEM Server restart • Can be changed by the user <p>The group number for nth row in the GROUP section is n. For example:</p> <ul style="list-style-type: none"> • “Communications Alarm” group number is 1 • “QOS Alarm” group number is 4 <p>The alarm groups are:</p> <ul style="list-style-type: none"> • Communications Alarm • Processing Error Alarm • Environmental Alarm • QOS Alarm • Equipment Alarm 	--	--	No default value

Key	Description	Minimum Value	Maximum Value	Default Value
PROBABLECAUSE	<p>Alarm probable cause configuration.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>The probable cause number for nth row in the PROBABLECAUSE section is n. For example:</p> <ul style="list-style-type: none"> “Loss of multi frame sync” probable cause number is 1 “Loss of frame sync” probable cause number is 4 <p>The probable causes are:</p> <ul style="list-style-type: none"> Heating or ventilation system failure Equipment malfunction Manual configuration, software crash or voltage fluctuation Module inserted Module removed Software failure or crash Module slot mismatch Congestion Communication problem Configuration or customization error Manual configuration or threshold crossed Underlying resource unavailable 	--	--	0 (means empty)
<p>CLIInfoPolling: This section provides information needed for the configuration of Thread pool and Polling interval required for the FMCLIInfoHandler module.</p>				
CLIInfoPollInterval	<p>Poll interval in seconds.</p> <hr/> <p> Important: These value are dependent on the keepalive notification interval.</p> <hr/>	1 sec	30 sec	15 sec
CLIInfoThreadPoolSize	Size of the Thread Pool.	5	20	10
<p>PENDINGALARM: This section describes the pending alarm related configuration.</p>				

Key	Description	Minimum Value	Maximum Value	Default Value
autoClearInterval	<p>Time-out interval for pending alarms in days. If any alarm is in pending state for this configured interval, then it will be automatically cleared.</p> <ul style="list-style-type: none">• Needs a WEM Server restart• Can be changed by the user	1	30	3

The hwinv.cfg File

This file provides the e-mail ID used when sending hardware change notifications.




Important: The parameter in this file is configurable through the installation process.

Key	Description	Default Value
HWEMAIL: This is the configuration file for Hardware Inventory.		
ChangeInHWMailFrom	<ul style="list-style-type: none">• E-mail address of the e-mail notification originator• Needs a WEM Server restart• Can be changed by the user	No default value

The ism.cfg File



This file contains parameters pertaining to communication between the Web Element Manager and managed chassis. These parameters include the security information used to access the chassis as well as the ports over which communication takes place.

This file also contains a parameter that provides the ability to enable/disable the SSL encryption for client-to-server and server-to-boxer communication.

 **Important:** Any change in the configuration files will restart the server resulting in client restart.


Key	Description	Minimum Value	Maximum Value	Default Value
IMGSessMgt: This section describes the parameters that store ASR 5000 login information.				
ASID	Application Server ID that will be used by the WEM server to communicate with ASR 5000. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	1	10	STARENT
ASPasswd	Application Server Password for the ASR 5000 that will be used by the WEM server to communicate with the ASR 5000. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	1	35	SN123
IMGPort	Port number on which the ASR 5000 should be running. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	10000	65535	14132
SSLConnect	Flag to enable or disable the SSL connection. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>Currently, this feature is disabled and only IIOP connections will be used.</p>	0	1	0

■ The ism.cfg File

Key	Description	Minimum Value	Maximum Value	Default Value
EnforceSSL	<p>Flag to enforce SSL.</p> <ul style="list-style-type: none"> Needs a WEM Server restart. Can be changed by the user. Overrides SSLConnect value, if set to 1. <p>Change the value of ENFORCE_SSL parameter in <i>ems/client/img.html</i> and <i>ems/client/imgdebug.html</i> if this value is changed. If set to 1, then the sslflag field will be updated to 't' for all existing IMGs in the boxer table in ConfigDB at server restart.</p>	0	1	0
SleepTime	<p>Time for which the cleanup thread sleeps.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	5	300	60
MaxIdleTime	<p>Maximum time for which the servant reference can be idle. Needs a WEM Server restart. Can be changed by the user</p>	30	1800	300
IMGKeepAlive: This section describes parameters related to the ASR 5000 keep-alive.				
IcmpTimeout	Timeout value for ICMP requests in seconds.	1	60	5
IcmpRetries	Number of retries for ICMP requests.	0	10	2
IcmpKeepAliveInterval	<p>Polling interval for ICMP requests in seconds.</p> <hr/> <p> Important: The value must be greater than $IcmpTimeout * (IcmpRetries + 1)$.</p> <hr/>	5	300	30
CorbaKeepAliveInterval	<p>Polling interval for CORBA requests in seconds.</p> <hr/> <p> Important: The value must be greater than or equal to $IcmpKeepAliveInterval$.</p> <hr/>	10	600	2 * IcmpKeepAliveInterval

The mcrdbs.cfg File

This file contains parameters that are configured to support the conversion of Vendor Format Master Database (VFMDB) to Starent Networks Format Master Database (SFMDB). This file also contains information on MCRDBS to handle the database files.

Key	Description	Minimum Value	Maximum Value	Default Value
MCRDBS: This section describes parameters that store MCRDBS related information.				
FullDBFilesImportInterval	Database files Import interval: This specifies the time interval in hours for Content Filtering Server to import various databases from MCRDBS. (Databases: SFMDB)	2 hrs	4320 hrs (90 days; 6 months)	24 hrs
INCDBFilesImportInterval	Database files Import interval: This specifies the time interval in hours for Content Filtering Server to import various databases from MCRDBS. (Databases: SFMDB-INC)	2 hrs	720 hrs (30 days; 1 month)	24 hrs
StarentFormatDbFileImportPath	Starent format database file path: This specifies the path where SFMDB files are located in MCRDBS. Example: <i><Mcrdbs server path>/cfems/<cfems ip address>/sfmdb</i>	--	--	--
StarentFormatIncDbFileImportPath	Starent format incremental database file path: This specifies the path where SFMDB-INC files are located in MCRDBS. Example: <i><MCRDBS server path>/cfems/<cfems ip address>/sfmincdb</i>	--	--	--
MCRDBSInfo	This specifies the MCRDBS information in the following format: MCRDBS Host name, MCRDBS Ip address1, User name1, password1 <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">  Important: If the user does not want to enter any values, leave the fields blank separated by comma. </div> Example: hostName, userName, password (OR), HostIPAddr, userName, Password	--	--	--

The mdproxy.cfg File

This configuration file defines various properties used for the MD EMS Proxy functionality.

Key	Description
MDAUDIT	
MDAuditPath	The directory path to log the audit trail into file. The base is the WEM server's directory. MDAuditPath = log/RESP
MDAuditSyncPath	MDAuditSyncPath = log/SYNC_RESP
MDAlarmPath	MDAlarmPath = log/FM

The nb.cfg File

This file contains parameters for NorthBound notifications from the WEM. The information in this file is used by the application for forwarding fault management information to other management devices on the NorthBound interface. This information includes such things as the device IP address and port number on which to forward notifications.



Important: Any change in the configuration files will restart the server resulting in client restart.

Key	Description	Minimum Value	Maximum Value	Default Value
Fault Management: This section describes the parameters that store NorthBound Notification Service related configuration information.				
NSMode	Mode using WEM gets the Notification Service reference. Valid values: URL, IOR, NONE <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	--	--	NONE
NSMode is URL ⓘ	Notification Service URL. The format is as follows: corbaloc:iiop:<NSAddr>:<NSPort>/<ChannelFactoryName>	--	--	corbaloc:iiop:127.0.0.1:5001/NOTIFY_SVC/CHANNEL_FACTORY
NSAddr	Host IP Address on which the Notification Service should be running. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	--	--	127.0.0.1
NSPort	Port number on which the Notification Service should be running <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	1000	65535	5001
ChannelFactoryName	Names to be assigned to the channel factory created by the Notification Service daemon. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	--	--	NOTIFY_SVC/CHANNEL_FACTORY

■ The nb.cfg File

Key	Description	Minimum Value	Maximum Value	Default Value
NSIORFILE	Path name of the Notification Service IOR (String field object reference) file. Here, the NSMode is IOR. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	--	--	No default value
NSChannelId	Channel ID through which WEM notifies the events. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	0	1000	0

The nbserver.cfg File


This file contains parameters for the configuration of NorthBound Server and Notification Service processes, and NorthBound interface.



Important: The NorthBound Server and Notification Service processes are customer-specific and are not operational without the appropriate license. Please contact your local sales representative for additional information.

The nms.cfg File

This file contains parameters which control WEM access to the PostgreSQL database, client access to the server, and other properties used by the application for proper operation.

 **Important:** Many of the parameters contained in this file are configurable through the installation process.

Key	Description	Minimum Value	Maximum Value	Default Value
DATABASE: This section describes parameters that store database configuration information.				
HostAddress	This specifies the host IP address.	--	--	127.0.0.1
UserName	This specifies the username to connect to the database.	--	--	postgres
PassWord	This specifies the password to connect to the database.	--	--	postgres
IOR				
Login		--	--	login.ior
RESPath		--	--	res_path.ior
SVPNIOR		--	--	svpn.ior
ConfigAudit		--	--	audit.ior
ClientSession: This section describes parameters related to client session management.				
UserLimit	Maximum number of user sessions allowed by the server at any time.	1	100	10
SecurityAdminLimit	Maximum number of Security Administrator sessions allowed by the server at any time.	1	UserLimit	5
ActiveToInactiveInterval	Time for activity time out in minutes.	1	-1 (infinite)	15
KeepAliveCallInterval	Keep alive polling time in seconds.	0	86400	15
KeepAliveRetryCnt	Retry count for keep alive: The minimum time for dismissing the client session if it is not reachable = KeepAliveCallInterval * KeepAliveRetryCnt	1	5	2
SessionInitTime	Time required for a typical session to initialize to ready state. Keep alive will be enabled after a specified time after client login.	KeepAliveCallInterval	86400	120

Key	Description	Minimum Value	Maximum Value	Default Value
UserSessionLimit	Maximum number of sessions for a particular user.	1	UserLimit	5
ContextUserLimit	Maximum number of user sessions for a context.	1	UserLimit	5
Notification	Global flag to enable/disable the sending notification. Possible values: ENABLE, DISABLE	--	--	ENABLE
Active timeout interval	This flag allows the user to login to the N+1st WEM Client and also, to cleanup any inactive / dead sessions. Session will get timed out after the given time (minutes) from the login time. Valid User: Security Administrator	--	--	--
DenialService	Global Flag to enable/disable the Denial-Of-Service. Possible Values: ENABLE, DISABLE	--	--	DISABLE

Key	Description	Minimum Value	Maximum Value	Default Value
DefaultUPref	<p>This is the default user preference configuration XML string.</p> <pre> DefaultUPref = <xml version="1.0" encoding="UTF-8"> <screen id="SCR_ID_TOPOLOGY"> <dimension> <param name="RESOLUTION" value="1024X768"/> <param name="XPOS" value="137"/> <param name="YPOS" value="89"/> <param name="WIDTH" value="512"/> <param name="HEIGHT" value="384"/> </dimension> <information> <param name="MAP_COLOR" value="- 1"/> <param name="MAP_IMAGE" value="none"/> <param name="LOOK_AND_FEEL" value= "Metal"/> <param name="LAST_MAP_VISITED" value="true"/> <param name="LAST_MAP_NAME" value="default"/> <param name="LAST_IMG_VISITED" value="true"/> <param name="LAST_IMG_NAME" value="earth"/> <paramname="CLIENT_TIMEOUT " value="60"/> <param name="POLLING_INTERVAL" value="10"/> <param name="AUDIO_ALARMING" value="true"/> <param name="SHOW_TOOLBAR" value="true"/> <param name="TOOLBAR_POSITION" value="North"/> <param name="NOTIFICATION" value="true"/> </information> </screen> </pre>	--	--	--

Key	Description	Minimum Value	Maximum Value	Default Value
DefaultAppPath	This is the default Application Path XML string. DefaultAppPath=<xml version="1.0" encoding="UTF-8"> <screen id="SCR_ID_APPLICATION_PATH"> <dimension> <param name="RESOLUTION" value="1024X768"/> <param name="XPOS" value="272"/> <param name="YPOS" value="275"/> <param name="WIDTH" value="608"/> <param name="HEIGHT" value="313"/> </dimension> <os id="Windows 95"> <param name="telnet" value="cmd /c start c:\\telnet.exe"/> <param name="ftp" value="cmd /c start c:\\ftp.exe"/> <param name="ssh" value="cmd /c start c:\\ssh.exe"/> <param name="mibbrowser" value="cmd /c start c:\\mibbrowser.exe"/> </os>	--	--	--
SWUpgrade: This section describes the parameters related to Software Upgrade.				
FTPSessLimit	Maximum number of FTP sessions.	--	--	5
FTPCallBackPeriod	Call back period in seconds with which the status of the FTP will be updated.	--	--	--
NMSIMGBaseDir	Base directory for Software Upgrade Manager - Image files.	--	--	NMSIMGBaseDir = ./flash
NMSIMGBaseDirForFileCompare	Base directory for Config file comparison - Image files.	--	--	NMSIMGBaseDirForFileCompare = ./flash
FRV: This section describes the front/rear-view related parameters.				
PollInterval	Time interval used by the WEM Client for polling. <ul style="list-style-type: none">• Does not require WEM Server restart• This value can be changed by the user	10 secs	60 secs	30 secs
Topology				
ClientBaseDir	Client base directory: This value is internally used by the Topology server module and should not be changed.	--	--	--

■ The nms.cfg File

Key	Description	Minimum Value	Maximum Value	Default Value
MapImageDir	Directory Name which contains image files. This value can be changed and the subdirectory must exist in ClientBaseDir.	--	--	--
POAPolicies: This section describes policies used for the POAs.				
ServerIOPPort	Using this port, three sequential upward ports will be used to create POAs. Change the value of SERVER_BASE_PORT parameter in ems/client/img.html and ems/client/imgdebug.html if this value is changed.	15000	15002	15000
EMSLicense				
Mode	The mode in which WEM started. Valid values: PDSN, GGSN, BOTH The value must be specified otherwise, the server does not function.	--	--	--
ConfigBackup				
FTPUserName	User name that will be used by the ASR 5000 to upload files on WEM server. This user account should be existing on the WEM server host machine. <ul style="list-style-type: none">• Needs server restart• Can be changed by the user	1	64	guest
FTPPassword	Password that will be used by the ASR 5000 while uploading files to WEM server. This user account should be existing on the WEM server host machine. <ul style="list-style-type: none">• Needs server restart• Can be changed by the user	1	64	guest12
EMSServer				

Key	Description	Minimum Value	Maximum Value	Default Value
ServerIpAddress	This IP Address will be used by WEM server for generating IOR files. If the field has default loopback interface values then, WEM server will take the first active interface present on the machine. Change this IP value to change IP used for IOR generation. If the specified IP is not active, WEM server will not start.	--	--	127.0.0.1
ServerPort	The TCP port to which the WEM server binds.	1025	65535	22222
EMSORB: This section describes the parameters related to Object Request Broker.				
ORBReadTimeout	The read time out used for sockets in seconds.	5 secs	3600 secs	30 secs
ORBWriteTimeout	The write time out used for sockets in seconds.	5 secs	3600 secs	30 secs
EMSSSLORB				
SSLORBReadTimeout	The read time out used for sockets in seconds.	5 secs	3600 secs	30 secs
SSLORBWriteTimeout	The write time out used for sockets in seconds.	5 secs	3600 secs	30 secs

The processmonitor.cfg File

This file contains parameters used by the Process Monitor function. These include parameters such as the directories from which WEM-related processes are started, polling intervals, and maximum percentage thresholds.

Key	Description	Minimum Value	Maximum Value	Default Value
ProcessInfo: This section provides all the process information to be monitored by the module.				
ListServer	Lists all the servers to be monitored: 0 = WebServer 1 = DB 2 = EMSServer 3 = EMSScriptServer 4 = BulkstatServer 5 = BulkstatParser 6 = NBServer 7 = NotifyService	--	--	--
WebServer	<p>Web Server Process Information: In this case, it is the Apache Web Server.</p> <ul style="list-style-type: none"> Name of the Process executable: ExeName=httpd Absolute or Relative path for executable file: ExePath=/<i><ems_dir></i>/apache/bin File name which contains the pid of the process: PidName=httpd.pid Absolute or Relative path for the pid file: PidPath=/<i><ems_dir></i>/apache/logs MultiProc: Flag indicating whether the process information should include the information of child processes or not. <p>Valid values:</p> <ul style="list-style-type: none"> 0: Disable 1: Enable 	--	--	0

Key	Description	Minimum Value	Maximum Value	Default Value
DB	<p>Database Process Information: In this case, it is Postgres.</p> <ul style="list-style-type: none"> Name of the Process executable: ExeName=postmaster Absolute or Relative path for executable file: ExePath=/<i><ems_dir></i>/postgres/bin File name which contains the pid of the process: PidName=postmaster.pid Absolute or Relative path for the pid file: PidPath=/<i><ems_dir></i>/postgres/data MultiProc: Flag indicating whether the process information should include the information of child processes or not. <p>Valid values:</p> <ul style="list-style-type: none"> 0: Disable 1: Enable 	--	--	0
EMSServer	<p>EMS Server Process Information.</p> <ul style="list-style-type: none"> Name of the Process executable: ExeName=server Absolute or Relative path for executable file: ExePath=/<i><ems_dir></i>/server/bin File name which contains the pid of the process: PidName=server.pid Absolute or Relative path for the pid file: PidPath=/<i><ems_dir></i>/server MultiProc: Flag indicating whether the process information should include the information of child processes or not. <p>Valid values:</p> <ul style="list-style-type: none"> 0: Disable 1: Enable 	--	--	0

■ The processmonitor.cfg File

Key	Description	Minimum Value	Maximum Value	Default Value
EMSScriptServer	<p>EMS Script Server Process Information.</p> <ul style="list-style-type: none"> Name of the Process executable: ExeName=scriptsv Absolute or Relative path for executable file: ExePath=/<i><ems_dir></i>/server/bin File name which contains the pid of the process: PidName=script.pid Absolute or Relative path for the pid file: PidPath=/<i><ems_dir></i>/server MultiProc: Flag indicating whether the process information should include the information of child processes or not. <p>Valid values:</p> <ul style="list-style-type: none"> 0: Disable 1: Enable 	--	--	0
BulkstatServer	<p>BulkstatServer Process Information.</p> <ul style="list-style-type: none"> Name of the Process executable: ExeName=bulkstatserver Absolute or Relative path for executable file: ExePath=.<i>bin</i> File name which contains the pid of the process: PidName=bsserver.pid Absolute or Relative path for the pid file: PidPath=. MultiProc: Flag indicating whether the process information should include the information of child processes or not. <p>Valid values:</p> <ul style="list-style-type: none"> 0: Disable 1: Enable 	--	--	0

Key	Description	Minimum Value	Maximum Value	Default Value
BulkstatParser	<p>BulkstatParser Process Information.</p> <ul style="list-style-type: none"> Name of the Process executable: ExeName=bulkstatparser Absolute or Relative path for executable file: ExePath=./bin File name which contains the pid of the process: PidName=bulkstatparser.pid Absolute or Relative path for the pid file: PidPath=. MultiProc: Flag indicating whether the process information should include the information of child processes or not. <p>Valid values:</p> <ul style="list-style-type: none"> 0: Disable 1: Enable 	--	--	0
NBServer	<p>NBServer Process Information.</p> <ul style="list-style-type: none"> Name of the Process executable: ExeName=nbserver Absolute or Relative path for executable file: ExePath=./bin File name which contains the pid of the process: PidName=nbserver.pid Absolute or Relative path for the pid file: PidPath=. MultiProc: Flag indicating whether the process information should include the information of child processes or not. <p>Valid values:</p> <ul style="list-style-type: none"> 0: Disable 1: Enable 	--	--	0

■ The processmonitor.cfg File

Key	Description	Minimum Value	Maximum Value	Default Value
NotifyService	NotifyService Process Information. <ul style="list-style-type: none"> Name of the Process executable: ExeName=Notify_Service Absolute or Relative path for executable file: ExePath=./bin File name which contains the pid of the process: PidName=notify_service.pid Absolute or Relative path for the pid file: PidPath=. MultiProc: Flag indicating whether the process information should include the information of child processes or not. Valid values: <ul style="list-style-type: none"> 0: Disable 1: Enable 	--	--	0
DirectoryInfo: This section provides information needed to monitor the directory size.				
DirEMSServer	EMS Server Directory Information. Path of EMS Server directory: DirPath=/ <i><ems_dir></i> /server	--	--	--
DirDB	Database Directory Information. Path of Database directory: DirPath=/ <i><ems_dir></i> /postgres/data	--	--	--
DirEMSFtp	EMS FTP Directory Information. Path of EMS FTP directory: DirPath=./data	--	--	--
DirEMSBkArch	EMS Bulkstat Archive Directory Information. Path of EMS Bulkstat archive directory: DirPath=./bulkstat_archive	--	--	--
DirFTPCFDB	FTP CF DB Directory Information. Path of FTP directory for CF DB: DirPath=./flash/cf/cfdatabases	--	--	--
Poll Information: This section provides information needed for the configuration of threshold poll interval in seconds. Each submodule under monitor has its own poll interval defined to give fine tune support.				
ProcInfoPollInterval	The process which changes frequently can be monitored for threshold limits with a smaller poll interval, say 5 seconds.	1 sec	36000 sec	5 sec
DirInfoPollInterval	The directory size does not change suddenly and can be monitored with 1 Min OR greater than 1 Min poll interval for threshold limit.	60 sec	36000 sec	300 sec
IFInfoPollInterval	If information is constant, it can be monitored once in a Min.	5 sec	36000 sec	60 sec


Key	Description	Minimum Value	Maximum Value	Default Value
<p>Threshold Information: This section provides information needed for the configuration of default threshold values for various parameters monitored by the module. These values (if available to server successfully from this configuration file) are used for default configuration of the threshold values for the parameters. These values indicate the maximum percentage of threshold limits for the individual parameters as the default values.</p> <p>Note:</p> <ul style="list-style-type: none"> WEM server will take the current configuration for the latest threshold values from the WEM Database saved in the last session of the server. The following values can be used as default configuration for the parameter(s) if no value(s) is/are available from the database. For example, first run of the server after a new installation or a database crash, etc.) <p>To use the following values to override the database configurations with configuration values, WEM server administrator can turn on (set value to 1) the <i>OverrideDBConfig</i> flag.</p>				
ThreshProcWebServer	This is the threshold value for disk utilization of Web Server process.	0	100	25
ThreshProcDB	This is the threshold value for disk utilization of DB Server process.	0	100	25
ThreshProcEMSServer	This is the threshold value for disk utilization of EMS Server process.	0	100	25
ThreshProcEMSScriptServer	This is the threshold value for disk utilization of EMS Script Server process.	0	100	25
ThreshProcBulkstatServer	This is the threshold value for disk utilization of Bulkstat Server process.	0	100	25
ThreshProcBulkstatParser	This is the threshold value for disk utilization of Bulkstat Parser process.	0	100	25
ThreshProcNBServer	This is the threshold value for disk utilization of NB Server process.	0	100	25
ThreshProcNotifyService	This is the threshold value for disk utilization of Notify Service process.	0	100	25
ThreshProcTotalCPU	This is the threshold value for total disk utilization of CPU.	0	100	60
ThreshProcTotalSwap	This is the threshold value for total disk utilization of swaps.	0	100	75
ThreshDirEMSServer	This is the threshold value for disk utilization of EMS Server Directory.	0	100	25
ThreshDirDB	This is the threshold value for disk utilization of Database Directory.	0	100	25
ThreshDirFTP	This is the threshold value for disk utilization of FTP Directory.	0	100	25
ThreshDirBlkArch	This is the threshold value for disk utilization of Bulkstat Archive Directory.	0	100	25
ThreshDirCFDB	This is the threshold value for disk utilization of CF DB Directory0.	0	100	25

■ The processmonitor.cfg File

Key	Description	Minimum Value	Maximum Value	Default Value
OverrideDBConfig	Flag to override the current DB Configuration of the threshold values with the configuration values. Values: <ul style="list-style-type: none"> • 1: True • 0: False 	--	--	0
CPU: This section describes the parameters used to calculate the CPU utilization.				
NumberofSample	This calculates the average of 'NumberofSample' given in the config file.	1	360	5

The ps.cfg File

This file contains parameters which control Web Element Manager polling intervals for managed chassis and database queries.

 **Important:** Any change in the configuration files will restart the server resulting in client restart.



Key	Description	Minimum Value	Maximum Value	Default Value
Polling: This section describes the parameters related to polling support.				
MinPollInterval	Minimum time interval used by the WEM server for polling. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	10 secs	86400 secs	10 secs
MaxPollInterval	Maximum time interval used by the WEM server for polling. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	10 secs	86400 secs	86400 secs
PoolEnable	Flag to enable/disable the thread pool. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user Values: <ul style="list-style-type: none"> PoolEnable 1 = Thread pool enable PoolEnable 0 = Thread pool disable 	0	1	0
Size	Size of the thread pool. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	10	100	10
MaxSize	Maximum size of the thread pool. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	10	100	10

■ The ps.cfg File

Key	Description	Minimum Value	Maximum Value	Default Value
ErrorCausingMethodRetries	Number of retries for error causing method. WEM server stops calling the error causing method after configurable successive method calls give the same error. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	1	10	3
EnableInterval	Enabling interval for disabled fetch in seconds. The server periodically enables the disabled fetch. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	10	600	120
Database: This section describes the parameters related to database information.				
QueryNameLimit	Number of queries to be stored in the database per user per context. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	100	200	100

The psmon.cfg File

This file contains parameters for the operation of the PSMon (process monitor) function supported by the WEM.

Key	Description	Default Value
NotifyEmail	Defines the e-mail address where notification e-mails are to be sent.	root@localhost
Smtphost	Defines the IP address or hostname of the SMTP server to be used to send e-mail notifications.	localhost
Frequency	Defines the frequency of process table queries. This is the polling interval.	60 secs
LastSafePID	<p>When defined, psmon will never attempt to kill a process ID which is numerically less than or equal to the value defined by the last safepid.</p> <hr/> <p> Important: Psmon will never attempt to kill a process ID lesser than or equal to 1, or itself.</p>	100
ProtectSafePIDsQuietly	Accepts a boolean value of On or Off. Suppresses all notifications from preserved process IDs when used in conjunction with the last safepid directive.	Off
DryRun	<p>Forces this psmon to as if the --dryrun command line switch had specified. This is useful if you want to force a specific configuration file to only report and never actually take any automated action. This is enabled in this default distribution configuration to prevent people from blindly executing psmon “out of the box” and causing damage in live environments.</p> <p>The <Process *> scope is commented out by default. It should be used with extreme care. If used, run psmon in “DryRun” mode by adding the “DryRun” directive in this configuration file.</p> <hr/> <p> Important: Read the config file thoroughly before enabling this feature.</p>	Enabled

■ The psmon.cfg File

Key	Description	Default Value
	<p>For example: Use the following format to configure each process. Copy the following 6 lines for each WEM Process to monitor and modify according to the WEM Path:</p> <pre><Process /<ems_dir>/server/bin/server> spawnncmd (cd /<ems_dir>/server; /<ems_dir>/server/bin/server) pidfile /<ems_dir>/server/server.pid numretry 2 tmintval 300 </Process></pre> <p>Note: Do not remove the following statement as it is used to modify the config file while installing through the GUI Installer:</p> <pre><Process /<ems_dir>/postgres/bin/postmaster -i> spawnncmd /<ems_dir>/server/scripts/postgresctl start pidfile /<ems_dir>/postgres/data/postmaster.pid numretry 10 tmintval 330 </Process></pre> <pre><Process /<ems_dir>/apache/bin/httpd -f /<ems_dir>/apache/conf/httpd.conf> spawnncmd /<ems_dir>/apache/bin/apachectl start pidfile /<ems_dir>/apache/logs/httpd.pid numretry 10 tmintval 330 </Process></pre> <pre><Process /<ems_dir>/server/bin/server> spawnncmd (cd /<ems_dir>/server; /<ems_dir>/server/bin/server) pidfile /<ems_dir>/server/server.pid numretry 10 tmintval 330 </Process></pre> <pre><Process /<ems_dir>/server/bin/bulkstatsserver> spawnncmd (cd /<ems_dir>/server; /<ems_dir>/server/bin/bulkstatserver) pidfile /<ems_dir>/server/bssserver.pid numretry 10 tmintval 330 </Process></pre>	

Key	Description	Default Value
	<pre> <Process /<ems_dir>/server/bin/bulkstatparser> spawnncmd (cd /<ems_dir>/server; /<ems_dir>/server/bin/bulkstatparser) pidfile /<ems_dir>/server/bulkstatparser.pid numretry 10 tmintval 330 </Process> <Process /<ems_dir>/server/bin/Notify_Service> spawnncmd (cd /<ems_dir>/server; /<ems_dir>/server/bin/nbSrvr) pidfile /<ems_dir>/server/notify_service.pid numretry 10 tmintval 330 </Process> <Process /<ems_dir>/server/bin/nbserver> spawnncmd (cd /<ems_dir>/server; /<ems_dir>/server/bin/nbserver) pidfile /<ems_dir>/server/nbserver.pid numretry 10 tmintval 330 </Process> <Process /<ems_dir>/server/bin/scriptsrv> spawnncmd (cd /<ems_dir>/server; /<ems_dir>/server/bin/scriptsrv) pidfile /<ems_dir>/server/script.pid numretry 10 tmintval 330 </Process> Where: <ul style="list-style-type: none"> • numretry and tmintval are optional • “tmintval” must be in seconds and greater than ('numretry' * 'Frequency') • Incase of wrong values, this will not work properly </pre>	
	New Processes	
	<p>Do not edit these lines if you do not have enough information. The instances should not be 0.</p> <pre> <Process /<ems_dir>/perl5.8.5/bin/perl -w ./psmon --daemon --cron> pidfile /<ems_dir>/server/psmon.pid instances 1 </Process> </pre>	
	Sendmail SMTP Mail Daemon	
	<pre> <Process sendmail> spawnncmd /sbin/service sendmail start pidfile /var/run/sendmail.pid </Process> </pre>	
	Apache Group HTTP Daemon	

■ The psmon.cfg File

Key	Description	Default Value
	<pre> <Process httpd> spawncmd /sbin/service httpd restart pidfile /var/run/httpd.pid instances 200 pctcpu 80 </Process> </pre>	
MySQL Database		
	<pre> <Process mysqld> spawncmd /sbin/service mysqld restart killemd /sbin/service mysqld stop pidfile /var/run/mysqld/mysqld.pid pctcpu 90 pctmem 60 </Process> </pre>	

The res.cfg File

This file contains parameters for associating resource-bundles to specific Web Element Manager dialogs. This is the configuration file for fetching screen-specific resource-bundle paths. Currently there are only two bundles. The resource-ids must be present in both the sections.



Important: Any change in the configuration files will restart the server resulting in client restart.



Caution: To ensure proper operation of the Web Element Manager, do not edit the parameters in these files.

Bundle 1	Bundle 2
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Bundle 1	Bundle 2
<p>GlobalCommonId = res.globalcommon.GlobalCommonCompFileChooserId = res.components.FileChooserCompColorChooserId = res.components.ColorChooserCompOptionPaneId = res.components.OptionPaneCompTableId=res.components.tabl e.STableScrKeyExport = res.components.table.SExportFileScrKeyBoxerList = res.screens.boxerlist.GlobalListScrKeyUser = res.screens.useradm.UserAdminScrKeySubscriber = res.screens.subscriber.SubscriberScrKeyPPPSession = res.screens.ppp.SPPPScrKeyPPPConfig = res.screens.ppp.SPPPScrKeyPPPCounter = res.screens.ppp.SPPPScrKeyPPPSummary = res.screens.ppp.SPPPScrKeyPPPEchoTest = res.screens.ppp.SPPPScrKeyPPPStat = res.screens.ppp.SPPPScrKeyPPPInfo = res.screens.ppp.SPPPScrKeyAAATest = res.screens.aaa.SRADIUSScrKeyAAARADIUSTest = res.screens.aaa.SRADIUSScrKeyAAARADIUSCounter = res.screens.aaa.SRADIUSScrKeyAAARADIUSCounterDetails = res.screens.aaa.SRADIUSScrKeyAAARADIUSAuth = res.screens.aaa.SRADIUSScrKeyAAARADIUSAuthConfig = res.screens.aaa.SRADIUSScrKeyAAARADIUSAcct = res.screens.aaa.SRADIUSScrKeyAAARADIUSCharging = res.screens.aaa.SRADIUSScrKeyAAARADIUSChargingConfi g = res.screens.aaa.SRADIUSScrKeyAAAContextConfig = res.screens.aaa.SRADIUSScrKeyModifyContextAAA = res.screens.aaa.SRADIUSScrKeyAAARADIUSResult = res.screens.aaa.SRADIUSScrKeyAAAGlobalConfig = res.screens.aaa.SRADIUSScrKeyModifyGlobalAAA = res.screens.aaa.SRADIUSScrKeySubsCriteria = res.screens.monitor.SMonitorFilterScrKeyFrontView = res.screens.csp.SCSPScrKeyRearView = res.screens.csp.SCSPScrKeySysInfo = res.screens.csp.SCSPScrKeyCardConfig = res.screens.csp.SCSPScrKeyPortConfig = res.screens.csp.SCSPScrKeyModifyPort = res.screens.csp.SCSPScrKeyPortInformation = res.screens.csp.SCSPScrKeyShowPortCounters = res.screens.csp.SCSPScrKeyIntfPortBind = res.screens.csp.SCSP</p>	<p>ScrKeyBoxerOperation = res.screens.boxerlist.BoxerOperationScrKeyNewMap = res.screens.boxerlist.NewMapScrKeySelectImage = res.screens.boxerlist.SelectImageScrKeyUserAdmin = res.screens.useradm.UserAdminScrKeyUser = res.screens.useradm.UserScrKeySubscriber = res.screens.subscriber.SubscriberScrKeyShowSubscriber = res.screens.subscriber.SShowSubscriberScrKeyShowSubscriber PDSNResult = res.screens.subscriber.SShowSubscriberPDSNResultScrKeySh owSubscriberGGSNResult = res.screens.subscriber.SShowSubscriberGGSNResultScrKeyAb out = res.topology.AboutDialogScrKeyTopology = res.topology.TopologyScrKeyPPPSession = res.screens.ppp.SPPPSessionScrKeyPPPConfig = res.screens.ppp.SPPPCounterScrKeyPPPCounter = res.screens.ppp.SPPPSummaryScrKeyPPPStat = res.screens.ppp.SPPPSummaryScrKeyPPPInfo = res.screens.ppp.SPPPIInfoScrKeyContextAdministration = res.screens.contextlist.ContextAdministrationScrKeyContextAd d = res.screens.contextlist.ContextAddScrKeyContextModify = res.screens.contextlist.ContextModifyScrKeyAccessListUndefi ned = res.screens.contextlist.AccessListUndefinedScrKeyContextOpe rResults = res.screens.contextlist.ContextOperResultsScrKeyConfigPDSN = res.screens.pdsn.PDSNServiceScrKeyShowPDSN = res.screens.pdsn.PDSNServiceScrKeySPIBind = res.screens.pdsn.PDSNServiceScrKeyAddService = res.screens.pdsn.PDSNServiceScrKeyPDSNClosedRP = res.screens.pdsn.SPdsnClosedRPScrKeyPDSNClosedRPConfig = res.screens.pdsn.SPdsnClosedRPConfigScrKeyShowPcfStatus = res.screens.pdsn.SShowPcfStatusScrKeyUserPref = res.screens.userpreferences.UserPreferencesScrKeyAAATest = res.screens.aaa.SAAATestScrKeyAAARADIUSTest = res.screens.aaa.SRADIUSTestScrKeyAAARADIUSCounter = res.screens.aaa.SRADIUSCounter</p>

Bundle 1	Bundle 2
<pre> ScrKeyShowCardDiag = res.screens.csp.SCSPScrKeyCardHardware = res.screens.csp.SCSPScrKeyHardwareInventory = res.screens.csp.SCSPScrKeyHardwareVersion = res.screens.csp.SCSPScrKeyMacAddr = res.screens.csp.SCSPScrKeyMIPFA = res.screens.mip.SMIPScrKeyMIPFASess = res.screens.mip.SMIPScrKeyMIPFASat = res.screens.mip.SMIPScrKeyMIPHA = res.screens.mip.SMIPScrKeyMIPHASess = res.screens.mip.SMIPScrKeyMIPHASat = res.screens.mip.SMIPScrKeyAuditFilter = res.screens.audit.SAuditScrKeyAuditDetails = res.screens.audit.SAuditScrKeyCardMapping = res.screens.csp.SCSPScrKeySynch = res.screens.csp.SCSPScrKeyVLANDetails = res.screens.csp.SCSPScrKeySShowAlarm = res.screens.csp.SCSPScrKeyPortUtilization = res.screens.csp.SCSPScrKeyPrint = res.print.SPrintScrKey = res.screens.process.SProcessMonitorScrKeyProcessThreshold = res.screens.process.SProcessMonitorScrKeySAPNConfig = res.screens.apn.SAPNScrKeySAPNStat = res.screens.apn.SAPNScrKeyGTPPCnf = res.screens.gtpg.SGTPPScrKeyGTPPCnf = res.screens.gtpg.SGTPPScrKeyGTPPTest = res.screens.gtpg.SGTPPScrKeyIPSecMap = res.screens.ipsec.SIPSecScrKeyIsakmp = res.screens.ipsec.SIPSecScrKeyIsakmpSA = res.screens.ipsec.SIPSecScrKeyTransform = res.screens.ipsec.SIPSecScrKeyIPSecSA = res.screens.ipsec.SIPSecScrKeyIPSecStat = res.screens.ipsec.SIPSecScrKeyIPSecResult = res.screens.ipsec.SIPSecScrKeyPDSNClosedRPCnf = res.screens.pdsn.SPdsnClosedRPScrKeySPIOTiming=res.screens.csp.SCSP </pre>	<pre> ScrKeyAAARADIUSCounterDetails = res.screens.aaa.SRADIUSCounterScrKeyAAARADIUSAuth = res.screens.aaa.SRADIUSAuthScrKeyAAARADIUSAuthConf = res.screens.aaa.SRADIUSAuthScrKeyAAARADIUSAcct = res.screens.aaa.SRADIUSAcctScrKeyAAAContextConfig = res.screens.aaa.SAAAContextConfigScrKeyModifyContextAAA = res.screens.aaa.SAAAContextConfigScrKeyAAARADIUSResult = res.screens.aaa.SRADIUSResultScrKeyAAAGlobalConfig = res.screens.aaa.SAAAGlobalConfigScrKeyModifyGlobalAAA = res.screens.aaa.SAAAGlobalConfigScrKeyRADIUSClientStatus = res.screens.aaa.SRADIUSClientStatusScrKeyAccessList = res.screens.vpn.AccessListScrKeyAccessListOpr = res.screens.vpn.AccessListScrKeyIPRoute = res.screens.vpn.IPRouteScrKeyIPRouteConf = res.screens.vpn.IPRouteScrKeySGetIntf = res.screens.vpn.IPRouteScrKeyIPPool = res.screens.vpn.IPPoolScrKeyIPPoolConf = res.screens.vpn.IPPoolScrKeyIPInterface = res.screens.vpn.IPInterfaceScrKeyIPInterfaceConf = res.screens.vpn.IPInterfaceScrKeyDNSConf = res.screens.vpn.SDNSConfScrKeyShowResult = res.screens.vpn.ResultCodeScrKeyIPInterfaceStats = res.screens.vpn.SIPInterfaceStatsScrKeyBusyoutRangeConf = res.screens.vpn.SBusyoutRangeConfScrKeyShowIPSP = res.screens.vpn.SShowIPSPScrKeyMonitorProtocols = res.screens.monitor.SMonitorScrKeyMonitorSubscribers = res.screens.monitor.SMonitorScrKeyProtoCriteria = res.screens.monitor.SMonitorFilterScrKeySubsCriteria = res.screens.monitor.SMonitorSubsFilterScrKeyFrontView = res.screens.csp.SIMGViewScrKeyRearView = res.screens.csp.SIMGViewScrKeySysInfo = res.screens.csp.SSysInfoScrKeyCardConfig = res.screens.csp.SCardConfig </pre>

Bundle 1	Bundle 2
<p>ScrKeyApplicationServerConfig=res.screens.vmg.SApplicationServerScrKeyAsAppDBConfig=res.screens.vmg.SAsAppDBScrKeyAsAppVimConfig=res.screens.vmg.SAsAppVimScrKeyAsAppChatConfConfig=res.screens.vmg.SAsAppChatConfScrKeyVmgMmsConfig=res.screens.vmg.SVmgMmsScrKeyAsDisConfig=res.screens.vmg.SAsDisScrKeyAsAppPttConfig=res.screens.vmg.SAsAppPttScrKeySTiming=res.screens.csp.SCSPScrKeyMultipleColSort = res.components.table.SMultipleColumnSortScrKeyIMGInfo = res.screens.hwinventory.SIMGInfoScrKeyProxyDns = res.screens.vpn.SProxyDnsScrKeyCscfPeerServer = res.screens.ims.SCscfPeerServerScrKeyCscfPolicy = res.screens.ims.SCscfPolicyScrKeyCscfService = res.screens.ims.SCscfServiceScrKeyCscfSessTemp = res.screens.ims.SCscfSessTempScrKeyCscfRoute = res.screens.ims.SCscfRouteScrKeyCscfACL = res.screens.ims.SCscfAclScrKeyCscfTranslation = res.screens.ims.SCscfTranslationScrKeyClassMap = res.screens.vpn.SClassMapScrKeyPolicyMap = res.screens.vpn.SPolicyMapScrKeyPolicyGroup = res.screens.vpn.SPolicyGroupScrKeyCscfURN = res.screens.ims.SCscfUrnScrKeyOnDemandReportConfig=res.screens.cf.SReportCommonScrKeySearchFilter=res.screens.cf.SReportCommonScrKeyViewStatusReportConfig=res.screens.cf.SReportCommonScrKeyReportDetails=res.screens.cf.SReportCommon</p>	<p>ScrKeyPortConfig = res.screens.csp.SPortConfigScrKeyModifyPort = res.screens.csp.SModifyPortScrKeyPortInformation = res.screens.csp.SPortInformationScrKeyShowPortCounters = res.screens.csp.SShowPortCountersScrKeySystem = res.screens.csp.SSysInfoScrKeyShowCardDiag = res.screens.csp.SShowCardDiagScrKeyCardHardware = res.screens.csp.SCardHardwareScrKeyHardwareInventory = res.screens.csp.SHardwareInventoryScrKeyHardwareVersion = res.screens.csp.SHardwareVersionScrKeyShowPower = res.screens.csp.SShowPowerScrKeySoftUpgrade = res.screens.softupgrade.SSoftUpgradeScrKeyShowVersion = res.screens.softupgrade.SShowVersionScrKeyOnlinePatchUpgrade = res.screens.softupgrade.SOnlinePatchUpgradeScrKeyFCFileSelection = res.screens.softupgrade.SFileSelectionScrKeyFCFileComparisonResult = res.screens.softupgrade.SFileComparisonResultScrKeyFCRemoteFileBrowser = res.screens.softupgrade.SRemoteFileBrowserScrKeyConfigurationFileEditor = res.screens.softupgrade.SConfigurationFileEditorScrKeyBootConfiguration = res.screens.softupgrade.SBootConfigurationScrKeyMIPFA = res.screens.mip.SMIPFAScrKeyMIPFASess = res.screens.mip.SMIPFASessScrKeyMIPFAStat = res.screens.mip.SMIPFAStatScrKeyMIPHA = res.screens.mip.SMIPHAScrKeyMIPHASess = res.screens.mip.SMIPHASessScrKeyMIPHAStat = res.screens.mip.SMIPHAStatScrKeyMIPFAContext = res.screens.mip.SMIPFAContextScrKeyMIPHAContext = res.screens.mip.SMIPHAContextScrKeySubsConfig = res.screens.subscriber.SubsConfigScrKeyChangePassword = res.screens.useradm.SChangePasswordScrKeyChangePasswordDialog = res.screens.useradm.SChangePasswordDialogScrKeyDefaultSubsConfig = res.screens.subscriber.SDefaultSubsConfigScrKeySysLog = res.screens.logging.SSysLogScrKeySysLogConf = res.screens.logging.SSysLog</p>

Bundle 1	Bundle 2
	<pre> ScrKeyLoggingConfig = res.screens.logging.SLoggingConfigScrKeyShowResultDialog = res.screens.logging.SResultDialogScrKeySNMPShow = res.screens.snmp.SSNMPScrKeySNMPConfig = res.screens.snmp.SSNMPConfigScrKeySNMPStatistics = res.screens.snmp.SSNMPStatisticsScrKeyUserSessInfo = res.screens.security.SUserSessInfoScrKeyInstall = res.screens.license.SInstallScrKeyLicense = res.screens.license.SLicenseScrKeyClock = res.screens.clock.SClockScrKeyAudit = res.screens.audit.SAuditScrKeyAuditFilter = res.screens.audit.SAuditFilterScrKeyAuditDetails = res.screens.audit.SAuditDetailsScrKeyBulkStat = res.screens.bulkstatistics.BulkStatsScrKeyBulkStatConf = res.screens.bulkstatistics.BulkStatsScrKeyBulkAnalysis = res.screens.bulkstatistics.performancestatScrKeyGraphScreenB ulk = res.screens.bulkstatistics.performancestatScrKeyPerformanceSt at = res.screens.bulkstatistics.performancestatScrKeyOrbemClientS ession = res.screens.orbem.SOrbemClientSessionScrKeyOrbemConfig = res.screens.orbem.SOrbemConfigScrKeyModifyOrbemConfig = res.screens.orbem.SOrbemConfigScrKeyModifyOrbemClient = res.screens.orbem.SModifyOrbemClientScrKeyUCM = res.screens.ucm.SUCMSScrKeyCardMapping = res.screens.csp.SCardMappingsScrKeySysInfoAdv = res.screens.csp.SAdvDataScrKeyHalt = res.screens.csp.SHaltScrKeyMigrate = res.screens.csp.SMigrateScrKeyPriority = res.screens.csp.SPriorityScrKeySynch = res.screens.csp.SSynchScrKeyVLANDetails = res.screens.csp.SVLANDetailsScrKeyMacAddr = res.screens.csp.SPortMacAddrScrKeyPortUtilization = res.screens.csp.SPortUtilizationScrKeyAllMgr = res.screens.session.SessionSubsystemScrKeySessRecovery = res.screens.session.SSessRecoveryScrKeyShowSessionProgress = res.screens.session.SShowSessionProgress </pre>

Bundle 1	Bundle 2
	<pre> ScrKeySessProgressFilterDlg = res.screens.session.SShowSessionProgressScrKeyGenericRP = res.screens.rp.SGenericRPScrKeyGenericBCMCS = res.screens.bcmcs.SGenericBCMCSScrKeyMulticastSessions = res.screens.bcmcs.SMulticastSessionsScrKeyMulticastSessionF ilter = res.screens.bcmcs.SMulticastSessionsFilterDialogScrKeyMulti castSessionsResult = res.screens.bcmcs.SShowMulticastSessionsResultScrKeySSho wCpu = res.screens.cpu.SShowCpuScrKeySShowCpuDetails = res.screens.cpu.SShowCpuScrKeySShowTask = res.screens.cpu.SShowTaskScrKeyShowResources = res.screens.cpu.SShowResourcesScrKeyTaskConfig = res.screens.cpu.STaskConfigScrKeyProcessThreshold = res.screens.process.SThresholdScrKeyCOAlarms = res.screens.alarm.SCOAlarmsScrKeyAlarmStatFilters = res.screens.alarm.SAlarmStatFiltersScrKeyAlarmStat = res.screens.alarm.SAlarmStatFiltersScrKeyEventSetFilter = res.screens.alarm.SAlarmFilterScrKeyEventConfig = res.screens.alarm.SAlarmConfigScrKeyEvent = res.screens.alarm.SAlarmViewScrKeyEventDesc = res.screens.alarm.SDescScrKeySShowAlarm = res.screens.alarm.SShowAlarmScrKeyShowAlarmStat = res.screens.alarm.SShowAlarmStatScrKeyNTP = res.screens.system.SNTPScrKeyNetReqPDPCtxtConfig = res.screens.system.SNetReqPDPCtxtConfigScrKeyNetReqPDP CtxtConfigDlg = res.screens.system.SNetReqPDPCtxtConfigScrKeySAPN = res.screens.apn.SAPNScrKeySAPNConfig = res.screens.apn.SAPNConfigScrKeySAPNStat = res.screens.apn.SAPNStatScrKeyDhcpShow = res.screens.dhcp.SDHCPShowScrKeyDhcpConfig = res.screens.dhcp.SDHCPConfigScrKeyDhcpStat = res.screens.dhcp.SDHCPStatScrKeySDHCPStatus = res.screens.dhcp.SDHCPStatusScrKeyDhcpCache = res.screens.dhcp.SDHCPCacheScrKeyDhcpTest = res.screens.dhcp.SDHCPTestScrKeyLAC = res.screens.l2tp.L2tpScrKeyLACConfig = res.screens.l2tp.L2tp </pre>

Bundle 1	Bundle 2
	<pre> ScrKeySShowL2TP = res.screens.l2tp.L2tpScrKeyLTTPTunnelFull = res.screens.l2tp.L2tpScrKeyLTTPTunnelCntrs = res.screens.l2tp.L2tpScrKeyLTTPTunnelSummary = res.screens.l2tp.L2tpScrKeyLTTPTSessionFull = res.screens.l2tp.L2tpScrKeyLTTPTSessionCntrs = res.screens.l2tp.L2tpScrKeyLTTPTSessionSummary = res.screens.l2tp.L2tpScrKeyLTTPTStat = res.screens.l2tp.L2tpScrKeyLNSShow = res.screens.l2tp.SLNSShowScrKeyLNSConfig = res.screens.l2tp.SLNSSConfigScrKeyGTPPConf = res.screens.gtp.SGTPPConfScrKeyGTPPStat = res.screens.gtp.SGTPPStatScrKeyGTPPTest = res.screens.gtp.SGTPPTestScrKeyGSNConf = res.screens.gtp.SGSNScrKeyGTPPInterimNow = res.screens.gtp.SGTPPInterimNowScrKeyShowGTPPCounter s = res.screens.gtp.SShowGTPPCountersScrKeyGTPPStorageSrv Stat = res.screens.gtp.SGTPPStorageServerStatisticsScrKeyGGSNSe rvice = res.screens.ggsn.SGGSNServiceScrKeyGGSNServiceInfo = res.screens.ggsn.SGGSNServiceInfoScrKeyGGSNServiceConfi g = res.screens.ggsn.SGGSNServiceConfigScrKeyGTPCStat = res.screens.gtpc.SGTPCStatisticsScrKeyGTPCTest = res.screens.gtpc.SGTPCTestScrKeyIPSecMap = res.screens.ipsec.SIPSecMapScrKeyIsakmp = res.screens.ipsec.SIsakmpScrKeyIsakmpSA = res.screens.ipsec.SIsakmpSAScrKeyTransform = res.screens.ipsec.STransformScrKeyIPSecSA = res.screens.ipsec.SIPSecSAScrKeyIPSecStat = res.screens.ipsec.SIPSecStatScrKeyPeriodicSaveBoxerCfg = res.screens.configbackup.SPeriodicSaveBoxerCfgScrKeyIPRIP Config = res.screens.rip.SIPRIPConfigScrKeyIPRIPConfigDlg = res.screens.rip.SIPRIPConfigScrKeyShowRouterRIPConfig = res.screens.rip.SRouterRIPConfigScrKeyModifyRouterRIPCon fig = res.screens.rip.SRouterRIPConfigScrKeyKeyChainConfig = res.screens.rip.SKeyChainConfigurationScrKeyAddKeyChain = res.screens.rip.SKeyChainConfiguration </pre>

Bundle 1	Bundle 2
	<pre> ScrKeyModifyKeyChainConfig = res.screens.rip.SModifyKeyChainConfigScrKeyExternalInlineServer = res.screens.vpn.SExternalInlineServerScrKeyIPPoolDefConfig = res.screens.vpn.SIPPoolDefaultConfigScrKeyAddBusyoutRangeConf = res.screens.vpn.SAddBusyoutRangeConfScrKeySFetchNonLocalInfo = res.globalcommon.FetchNonLocalInfoScrKeySThreshShow = res.screens.threshold.SThreshShowScrKeyThreshConfig = res.screens.threshold.SThreshConfigScrKeySCongestionControl = res.screens.threshold.SCongestionControlScrKeyCongestionControlStat = res.screens.threshold.SCongestionControlStatScrKeyShowNRPC = res.screens.system.SShowNRPCScrKeyNewCallPolicy = res.screens.system.SNewCallPolicyScrKeySBannerDisplay = res.screens.system.SBannerDisplayScrKeyShowSessionDuration = res.screens.session.SShowSessionDurationScrKeySessDurationFilterDlg = res.screens.session.SShowSessionDurationScrKeySessionDisconnectStatistics = res.screens.session.SessionDisconnectStatisticsScrKeySessionSetupTimeStat = res.screens.session.SSessionSetupTimeStatScrKeyPortMonitor = res.screens.portmonitor.SPortMonitorScrKeyNetworkReachability = res.screens.nr.SNetworkReachabilityScrKeyNrConfig = res.screens.nr.SNrConfigScrKeySShowVMGAll = res.screens.vmg.SShowVMGAllScrKeySShowVMGInterfaces = res.screens.vmg.SShowVMGInterfacesScrKeySShowVMGGCPCStat = res.screens.vmg.SShowVMGGCPCStatScrKeyVMGgpdps = res.screens.vmg.SVMGgpdpsScrKeyGTPCInfo = res.screens.gtpc.SGTPCInfoScrKeyGTPCCounters = res.screens.gtpc.SGTPCCountersScrKeyGTPCSummary = res.screens.gtpc.SGTPCSummaryScrKeyGTPCSession = res.screens.gtpc.SGTPCSession </pre>

Bundle 1	Bundle 2
	<pre> ScrKeyAlarmScheduler = res.screens.alarm.SAlarmSchedulerScrIDGraphConfig = res.graphs.SGraphConfigScrKeyGraphFilter = res.graphs.SGraphFilterScrKeyGraphScreen = res.graphs.SGraphScreenScrKeyIPPoolDetail = res.screens.vpn.IPPoolScrKeyIMGFileBrowser = res.screens.softupgrade.SIMGFileBrowserScrKeyShowGTPPStorageServerCounters = res.screens.gtp.SCounterDialogScrKeyOSPExceptionHandler = res.screens.ospf.SOSPExceptionHandlerScrKeyShowOSPInformation = res.screens.ospf.SShowOSPInformationScrKeyShowOSPInterface = res.screens.ospf.SShowOSPInterfaceScrKeyShowOSPNeighbor = res.screens.ospf.SShowOSPNeighborScrKeyOSPConfiguration = res.screens.ospf.SOSPConfigurationScrKeyModifyOSPConfiguration = res.screens.ospf.SModifyOSPConfigurationScrKeySDHCPEXcpHandler = res.screens.dhcp.SDHCPExcpHandlerScrKeySDHCPSERVICEConfig = res.screens.dhcp.SDHCPServiceConfigScrKeySDHCPDetails = res.screens.dhcp.SDHCPDetailsScrKeySDHCPShowConfig = res.screens.dhcp.SDHCPShowConfigScrKeyUDR = res.screens.cdr.SCDRScrKeyUDRConfig = res.screens.cdr.SCDRConfigScrKeyShowOSPFBORDERRouters = res.screens.ospf.SShowOSPFBORDERRoutersScrKeyShowOSPFRoute = res.screens.ospf.SShowOSPFRouteScrKeyShowOSPFDATABASE = res.screens.ospf.SShowOSPFDATABASEScrKeyShowOSPFDDebugging = res.screens.ospf.SShowOSPFDDebuggingScrKeySPIOTIMING=res.screens.csp.SSPIOTIMINGScrKeyQoSnpuStats=res.screens.npu.SQoSnpuStatsScrKeyShowQoSnpuTRAFFICBandwidth = res.screens.npu.SShowQoSnpuTRAFFICBandwidthScrKeySQoSnpuConfig = res.screens.npu.SQoSnpuConfigScrKeyIPOSEPFInterface = res.screens.ospf.SIPOSEPFInterface </pre>

Bundle 1	Bundle 2
	<pre> ScrKeyModifyIPOSPPInterface = res.screens.ospf.SModifyIPOSPPInterfaceScrKeySDHCPStatistics = res.screens.dhcp.SDHCPStatisticsScrKeyModifyOSPFDebugging = res.screens.ospf.SModifyOSPFDebuggingScrKeyOSPFAreaConfiguration = res.screens.ospf.SOSPFAreaConfigurationScrKeyVirtualLinks = res.screens.ospf.SVirtualLinksScrKeyModifyOSPFAreaConfiguration = res.screens.ospf.SModifyOSPFAreaConfigurationScrKeyBoundPortCounters = res.screens.csp.SBoundPortCountersScrKeyIsakmpKeepAlive = res.screens.ipsec.SIsakmpKeepAliveScrKeyCryptoGroupConfig = res.screens.ipsec.SCryptoGroupConfigScrKeyCryptoGroup = res.screens.ipsec.SShowCryptoGroupScrKeyModifySchema = res.screens.bulkstatistics.SModifySchemaScrKeyShowOSPFNeighborDetail = res.screens.ospf.SShowOSPFNeighborDetailScrKeySDHCPInfo = res.screens.dhcp.SDHCPInfoScrKeyModifyFileSystem = res.screens.softupgrade.SModifyFileSystemScrKeyChargingService = res.screens.chargingservice.SChargingServiceScrKeyModifyChargingServiceConfig = res.screens.chargingservice.SChargingServiceScrKeyCSService = res.screens.css.SCSServiceScrKeyCSServiceConfig = res.screens.css.SAddCSServiceScrKeyCSServer = res.screens.css.SCSSServerScrKeyCSServerConfig = res.screens.css.SCSSServerConfigScrKeyCSSDelSeq = res.screens.css.SCSSDeliverySequenceScrKeyCSSDelSeqConfig = res.screens.css.SCSSDeliverySequenceConfigScrKeySGlobalConfiguration = res.screens.chargingservice.SGlobalConfigurationScrKeySCSDetails = res.screens.chargingservice.SCSDetailsScrKeyChargingServiceFlows = res.screens.chargingservice.SChargingServiceFlowsScrKeyChargingServiceSessions = res.screens.chargingservice.SChargingServiceSessions </pre>

Bundle 1	Bundle 2
	<pre> ScrKeyChargingServiceManagerStats = res.screens.charging.service.SChargingServiceManagerStatsScr KeyIPAccessGroupStatistics=res.screens.vpn.SIPAccessGroup StatisticsScrKeyCommonClass=res.utils.SCommonClassScrKey ySDataHandler=res.utils.SDataHandlerScrKeyAAARADIUSC harging = res.screens.aaa.SRADIUSChargingScrKeyAAARADIUSCharg ingConfig = res.screens.aaa.SRADIUSChargingScrKeyEDR = res.screens.cdr.SEDRScrKeyEDRConfig = res.screens.cdr.SEDRConfigScrKeyShowASInfo=res.screens.v mg.SShowASInfoScrKeyAsSigRoute=res.screens.vmg.SAsSig RouteScrKeyAsSigRouteConfig=res.screens.vmg.SAsSigRoute ConfigScrKeyAsSigSIP=res.screens.vmg.SAsSigSIPScrKeyAs SigSIPConfig=res.screens.vmg.SAsSigSIPConfigScrKeyApplic ationServer = res.screens.vmg.SApplicationServerScrKeyApplicationServerC onfig = res.screens.vmg.SApplicationServerConfigScrKeyAsAppDB = res.screens.vmg.SAsAppDBScrKeyAsAppDBConfig = res.screens.vmg.SAsAppDBConfigScrKeyAsAppVim = res.screens.vmg.SAsAppVimScrKeyAsAppVimConfig=res.scr eens.vmg.SAsAppVimConfigScrKeyAsAppChatConf = res.screens.vmg.SAsAppChatConfScrKeyAsAppChatConfConf ig=res.screens.vmg.SAsAppChatConfConfigScrKeySShowVM GPacketizers=res.screens.vmg.SShowVMGPacketizersScrKey AsChatConfTable=res.screens.vmg.SAsChatConfTableScrKey AsChatConfTableConfig=res.screens.vmg.SAsChatConfTable ConfigScrKeyVMGCall=res.screens.vmg.SShowVMGCallScr KeySShowVMGConnections=res.screens.vmg.SShowVMGCo nnectionsScrKeyVMG=res.screens.vmg.SVMGScrKeyVMGC onfig=res.screens.vmg.SVMGConfigScrKeySShowASAnnoun cements=res.screens.vmg.SShowASAnnouncementsScrKeyVM Ggpdsp= res.screens.vmg.SVMGgpdsp </pre>

Bundle 1	Bundle 2
	<pre> ScrKeyVMGVop = res.screens.vmg.SVMGVopScrKeyVMGVopConfig = res.screens.vmg.SVMGVopConfigScrKeyVmgMms = res.screens.vmg.SVmgMmsScrKeyVmgMmsConfig=res.screens.vmg.SVmgMmsConfigScrKeyVMGres=res.screens.vmg.SVMGresScrKeyVMGGcp = res.screens.vmg.SVMGGcpScrKeyVMGGcpConfig = res.screens.vmg.SVMGGcpConfigScrKeyPrepaid3GPP2Statistics = res.screens.session.SPrepaid3GPP2StatisticsScrKeyRemoteServerList = res.screens.vpn.SRemoteServerListScrKeyConfigRemoteServerList = res.screens.vpn.SConfigRemoteServerListScrKeyAsDis = res.screens.vmg.SAsDisScrKeyAsDisConfig=res.screens.vmg.SAsDisConfigScrKeyShowAsConf=res.screens.vmg.SShowAsConfScrKeyAsAppPtt = res.screens.vmg.SAsAppPttScrKeyAsAppPttConfig=res.screens.vmg.SAsAppPttConfigScrKeyVMGchannel=res.screens.vmg.SVMGchannelScrKeyAsAppVinfo = res.screens.vmg.SAsAppVinfoScrKeyAsAppVinfoConfig=res.screens.vmg.SAsAppVinfoConfigScrKeyIpv4DnsProxy=res.screens.vpn.SDNSProxyCfgScrKeyORBStats=res.screens.security.SORBStatisticsScrKeyDeleteChargingService = res.screens.charging.service.SChargingServiceScrKeyChargingServiceOprResult = res.screens.charging.service.SChargingServiceScrKeySTiming=res.screens.vmg.STimingScrKeyDomainConfig=res.screens.contextlist.SDomainConfigScrKeySessionCounters=res.screens.session.SShowSessionCountersScrKeySROHCStatistics=res.screens.ppp.SROHCStatisticsScrKeyIPPolicyForward=res.screens.vpn.SIPPolicyForwardScrKeyModifyIPPolicyForward=res.screens.vpn.SModifyIPPolicyForwardScrKeyMIPIPAssignment=res.screens.mip.SMIPIPAssignmentScrKeyMIPIPAssignmentConfig=res.screens.mip.SMIPIPAssignmentConfigScrKeyEnforceImsi = res.screens.system.SEnforceImsi </pre>

Bundle 1	Bundle 2
	<pre> ScrKeyIPv6Pool = res.screens.ipv6.SIPv6PoolScrKeyIPv6PoolConf = res.screens.ipv6.SIPv6PoolConfScrKeyIPv6PoolDetail = res.screens.ipv6.SIPv6PoolDetailScrKeyIPv6ShowResult = res.screens.ipv6.SShowResultScrKeySRPConfiguration = res.screens.srp.SSRPConfigurationScrKeyModifySRPConfigur ation = res.screens.srp.SModifySRPConfigurationScrKeySRPStatistics = res.screens.srp.SSRPStatisticsScrKeySRPCheckPointInfo = res.screens.srp.SSRPCheckPointInfoScrKeySRPInfo = res.screens.srp.SSRPInfoScrKeySRPMonitorInformation = res.screens.srp.SSRPMonitorInformationScrKeySupportDetails = res.screens.system.SShowSupportDetailsScrKeyBatchJobs = res.screens.monitor.SBatchJobsScrKeyShowBGP = res.screens.bgp.ShowBGPScrKeyShowBGPDebugging = res.screens.bgp.ShowBGPDebuggingScrKeyShowBGPNeighbo r = res.screens.bgp.ShowBGPNeighborScrKeyShowBGPSummary = res.screens.bgp.ShowBGPSummaryScrKeyConfigUpdateSched uler = res.screens.configupdate.SConfigSchedulerScrKeyScheduledC onfigUpdate = res.screens.configupdate.SScheduledConfigScrKeyConfigUpda teFilter = res.screens.configupdate.SFilterScreenScrKeyFileTransfer = res.screens.configupdate.SFileTransferScrKeyBGPConfiguratio n = res.screens.bgp.SBGPConfigurationScrKeyModifyBGPConfigu ration = res.screens.bgp.SModifyBGPConfigurationScrKeyClearIPBGP Peer = res.screens.bgp.SClearIPBGPPeerScrKeyAsPathAccessList = res.screens.bgp.AsPathAccessListScrKeyRouteMapConfigurati on = res.screens.bgp.SRouteMapConfigurationScrKeyAddModifyRo uteMapConfiguration = res.screens.bgp.SAddModifyRouteMapConfigurationScrKeySC onfigCriteria = res.screens.showconfig.SConfigCriteriaScrKeySViewConfig = res.screens.showconfig.SViewConfig </pre>

Bundle 1	Bundle 2
	<p>ScrKeyShowSystemInfo = res.screens.system.SShowSystemInfoScrKeySearchIPPoolNames = res.screens.vpn.SSearchIPPoolNamesScrKeyAppConfig = res.topology.SApplicationConfigurationScrKeySCrashList = res.screens.crashlist.SCrashListScrKeySCrashInfo = res.screens.crashlist.SCrashInfoScrKeyAddressHoldTimerInformation = res.screens.vpn.SAddressHoldTimerInformationScrKeyPoolAddressInformation = res.screens.vpn.SPoolAddressInformationScrKeySShowSigSipDns = res.screens.vmg.SShowSigSipDnsScrKeyAcsAnalyzerStatistics = res.screens.acs.SAcsAnalyzerStatisticsScrKeyShowAcsSessions = res.screens.acs.ShowAcsSessionsScrKeyShowAcsSessionsFilter = res.screens.acs.ShowAcsSessionsFilterScrKeyShowAcsFlows = res.screens.acs.ShowAcsFlowsScrKeyAcsFlowsFliter = res.screens.acs.ShowAcsFlowsFilterScrKeyShowAcsSubsystem = res.screens.acs.ShowAcsSubsystemScrKeyAsAppVimProfile = res.screens.vmg.SAsAppVimProfileScrKeyAsAppVimProfileConfig = res.screens.vmg.SAsAppVimProfileConfigScrKeyAcsCommonClass=res.screens.acs.SAcsCommonClassScrKeyAcsConf=res.screens.acs.SAcsConfScrKeyAcsOperResults=res.screens.acs.SAcsOperResultsScrKeyAcsCFPolicyConfig=res.screens.acs.SAcsCFPolicyConfigScrKeyAcsRulebaseConfig=res.screens.acs.SAcsRuleBaseConfigScrKeyAcsRuledefConfig=res.screens.acs.SAcsRuleDefConfigScrKeyACS = res.screens.acs.SACSScrKeyACSDetails = res.screens.acs.SACSDetailsScrKeyACSGeneralConfig = res.screens.acs.SACSGeneralConfigScrKeyACSChargingActionConfig = res.screens.acs.SACSChargingActionConfigScrKeyACSEDRCConfig = res.screens.acs.SACSEDRCConfig</p>

Bundle 1	Bundle 2
	<pre> ScrKeyACSUDRConfig = res.screens.acs.SACSUDRConfigScrKeyConfirmAttributeDelete = res.screens.acs.SACSEDRCfgScrKeyShowDiameterRoute = res.screens.acs.SShowDiameterRouteScrKeyDHCPTest = res.screens.dhcp.SDHCPTestScrKeyAcsChargingActionStats = res.screens.acs.SAcsChargingActionStatsScrKeyAcsRulebaseStats = res.screens.acs.SAcsRulebaseStatsScrKeyAcsRuledefStats = res.screens.acs.SAcsRuledefStatsScrKeyGTPPStorageServerStatus = res.screens.gtp.SShowGTPPStorageServerStatusScrKeyHardwareAudit = res.screens.hwinventory.SHardwareAuditScrKeyAddComment = res.screens.hwinventory.SAddCommentScrKeyHardwareFilter = res.screens.hwinventory.SHardwareFilterScrKeyHardwareDetails = res.screens.hwinventory.SHardwareDetailsScrKeyAcsDccaStats = res.screens.acs.SAcsDccaStatsScrKeyAcsDccaConfig = res.screens.acs.SAcsDccaConfigScrKeyRouteMapEntryDetails = res.screens.bgp.SRouteMapEntryDetailsScrKeyDiameter = res.screens.acs.SDiameterScrKeyDiameterConfig = res.screens.acs.SDiameterConfigScrKeyIMGInfo = res.screens.hwinventory.SIMGInfoScrKeyDiameterPeers = res.screens.acs.SDiameterPeersScrKeyDiameterEndpoint = res.screens.acs.SDiameterEndpointScrKeyDiameterStats = res.screens.acs.SDiameterStatsScrKeyProxyDns = res.screens.vpn.SProxyDnsScrKeySelectCounters = res.screens.bulkstatistics.SSelectCountersScrKeySROHCProfile = res.screens.rohc.SROHCProfileScrKeyPeriodicBackup = res.screens.periodicbackup.SPeriodicBackupScrKeyBackupHistory = res.screens.periodicbackup.SBackupHistoryScrKeyFilterScreen = res.screens.periodicbackup.SFilterScreenScrKeyShowRsvpStatistics = res.screens.rsvp.ShowRsvpStatistics </pre>

Bundle 1	Bundle 2
	<pre> ScrKeyShowRsvpCounters = res.screens.rsvp.ShowRsvpCountersScrKeyAlarmInformation = res.screens.alarm.AlarmInformationScrKeyRouteAccessList = res.screens.vpn.RouteAccessListxListScrKeyTrapForwarding = res.screens.alarm.TrapForwardingScrKeySMIPFAHASStatus = res.screens.mip.SMIPFAHASStatusScrKeyIPPrefixList = res.screens.vpn.IPPrefixListScrKeyOfflineUpgrade = res.screens.softupgrade.SOfflineUpgradeScrKeyClassMap = res.screens.vpn.SClassMapScrKeyPolicyMap = res.screens.vpn.SPolicyMapScrKeyPolicyGroup = res.screens.vpn.SPolicyGroupScrKeyIpRoutingMaxPath = res.screens.vpn.IPRoutingMaxPathScrKeyAccessFlowStatistics = res.screens.subscriber.AccessFlowStatisticsScrKeySAcsCredit ControlSessionStates = res.screens.acs.SAcsCreditControlSessionStatesScrKeyCscfPeer Server = res.screens.ims.SCscfPeerServerScrKeyCscfPolicy = res.screens.ims.SCscfPolicyScrKeyCscfService = res.screens.ims.SCscfServiceScrKeyCscfSessTemp = res.screens.ims.SCscfSessTempScrKeyCscfRoute = res.screens.ims.SCscfRouteScrKeyCscfACL = res.screens.ims.SCscfAclScrKeyCscfTranslation = res.screens.ims.SCscfTranslationScrKeySendBroadcastMessag e = res.screens.security.SBroadcastMessageScrKeySendBroadcast MessageAlert = res.screens.security.SBroadcastMessageScrKeySProtocolConfi g = res.screens.p2p.SProtocolConfigScrKeySProtocolAnalysis = res.screens.p2p.SProtocolAnalysisScrKeySP2PGraphView = res.screens.p2p.SP2PGraphViewScrKeySP2PTabularView = res.screens.p2p.SP2PGraphViewScrKeyCscfURN = res.screens.ims.SCscfUrnScrKeySyslog = res.screens.syslog.SSyslogScrKeySyslogConfig = res.screens.syslog.SSyslogConfigScrKeyShowMsg = res.screens.syslog.SShowMsg </pre>

Bundle 1	Bundle 2
	<pre> ScrKeyShowSyslogConf = res.screens.syslog.SShowSyslogConfScrKeyShowSgnTable = res.screens.ggsn.SGGSNServiceSgnTableScrKeyShowOspfVirtualLinks=res.screens.ospf.SShowOSPFVirtualLinksScrKeyShowFirewallStatistics = res.screens.firewall.SShowFirewallStatisticsScrKeySRADIUSCounterSummary=res.screens.aaa.SRADIUSCounterSummaryScrKeyOnDemandReportConfig=res.screens.cf.SOnDemandReportConfigScrKeySearchFilter=res.screens.cf.SSearchFilterScrKeyViewStatusReportConfig=res.screens.cf.SViewReportStatusScrKeyReportDetails=res.screens.cf.SReportDetailsScrKeySSGSNMAPStats=res.screens.sgsn.SSGSNMAPStatsScrKeySSGTPUStats=res.screens.sgsn.SSGTPUStatsScrKeySSGTPCStats=res.screens.sgsn.SSGTPCStatsScrKeySSGSNOprPolicy=res.screens.sgsn.SSGSNOPrPolicyScrKeySSGSNOprPolicyDetail=res.screens.sgsn.SSGSNOPrPolicyScrKeySACSCFCateStatView=res.screens.acs.SACSCFCateStatView.javaScrKeySCFStatistics=res.screens.cf.SCFStatisticsScrKeySCFCategoryDb=res.screens.cf.SCFCategoryDbViewScrKeySSCCPStats=res.screens.sgsn.SSCCPStats </pre>

The temp.cfg File

This configuration file is for a flat-file based interface between WEM and TEMIP.



Important: This configuration file is customer-specific and is not operational without the appropriate license. Please contact your local sales representative for additional information.

The thr.cfg File

This file contains parameters pertaining to the WEM thread pool.



Caution: To ensure proper operation of the WEM, do not edit the parameters in these files.

Key	Description	Minimum Value	Maximum Value	Default Value
THREAD: This is the configuration file for Thread pool.				
PoolEnable	Flag for enable or disable the thread pool. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user Values: <ul style="list-style-type: none"> 1 - Thread pool enable 0 - Thread pool disable 	0	1	0
Size	Size of the thread pool. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	10	100	10
MaxSize	Maximum size of the thread pool. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	10	100	100

The ua.cfg File

This file contains parameters pertaining to the WEM support for the ANSI T1.276 security specification. These include parameters granting and restricting access, login failures, password aging, and password complexity.



Important: Any change in the configuration files will restart the server resulting in client restart.

Key	Description	Minimum Value	Maximum Value	Default Value
Security: This file contains the list of security parameters for user access to WEM.				
AllowIpAddress	<p>List of allowed IP addresses and mask.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>IP address 0.0.0.0: Allows all addresses Format: Allow IP address/subnet-mask number, IP address/subnet-mask number...Nothing: Allow nothing</p>	--	--	--
DenyIpAddress	<p>List of deny IP addresses and mask.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>IP address 0.0.0.0: Deny all Addresses Format: Deny IP address/subnet-mask number, IP address/subnet-mask number...Nothing in list: Deny nothing</p>	--	--	--
ConsecutiveFailLogin	<p>The system limit on consecutive failed login for a given user ID shall be configurable.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>Value 0: No limit</p>	0	10	5

Key	Description	Minimum Value	Maximum Value	Default Value
LockOutInterval	<p>Locked out login ID, automatically, following the crossing of a configurable timeframe. Value is in minutes.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>Value 0: No lock out</p>	0	1440	60
AlertExpiryThreshold	<p>The account alert expiry threshold after WEM generates an alert. Value is in days.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>Value 0: No alert</p>	0	30	10
MinPasswordChangeInterval	<p>Passwords will be user changeable at the user's discretion following a configurable minimum interval since the last change. Value is in seconds.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>Value 0: No interval</p>	0	86400	86400
NumOfPasswordInHistory	<p>System will support a password history to prevent password reuse. The parameters will be configurable with a default of at least the past five password iterations.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>Value 0: No password history</p>	0	10	5
PasswordInHistoryAtLeast	<p>System will support a password history to prevent password reuse. The parameters will be configurable with a default of at least the past 180 days.</p> <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user <p>Value 0: No expiry</p>	0	365	180

Key	Description	Minimum Value	Maximum Value	Default Value
EMSAdminMailId	E-mail address of the WEM account created/reset password notification originator. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	--	--	No default value
PasswordComplexityRules	This flag indicates which rules should be used to verify password complexity. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user Possible values: <ul style="list-style-type: none"> 0: None 1: ANSI 	--	--	1
PasswordMinLength	This flag sets the minimum length of a user-defined password. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	PasswordComplexityRules = None		
		1	63	8
		PasswordComplexityRules = ANSI		
PasswordMinCharChange	This flag defines the minimum number of characters that must be changed when a user changes the password. <ul style="list-style-type: none"> Needs a WEM Server restart Can be changed by the user 	If PasswordComplexityRules is None, then do not check this. (Value is 0)		
		3	63	8
		PasswordComplexityRules = ANSI		
		0	8	2



Key	Description	Minimum Value	Maximum Value	Default Value
ChangePasswordOnNextLogin	<p>If this flag enabled then, on next login, the user will be required to change the password. Else, the user will not be required to change the password.</p> <ul style="list-style-type: none">• Needs a WEM Server restart• Can be changed by the user <p>Possible values:</p> <ul style="list-style-type: none">• 0: Password change will not be required• 1: Password change will be required	--	--	1

The vacuum.cfg File

This file contains parameters pertaining to PostgreSQL database vacuuming.

Configuring values for CompleteDB:

- If this value is 0, it means that vacuuming needs to be done on all the tables individually.
- If this value is 1, it means that vacuuming is done only to the database and not the tables individually.

Key	Description and Values				
Type: This section describes the type of vacuum to be done on database.					
VACUUM	This parameter reclaims space and makes it available for re-use. This command can operate in parallel with normal reading and writing of the table, as an exclusive lock is not obtained. This is the default value.				
VACUUM ANALYZE	This parameter performs a VACUUM and then an ANALYZE for each selected table.				
VACUUM FULL	This parameter physically reorders the tables. This requires an exclusive lock on each table while it is being processed.				
 Important: VACUUM FULL is not recommended for routine use.					
Database					
Database Name = hh, hh	First "hh" specifies the starting time to vacuum the database or table Second "hh" specifies the time interval for performing periodic vacuum after the starting time. Default value for database: 12,12 Default value for table: 00, 00. This means that do not vacuum the database or table. It means midnight 12 as we have a separate value for the same, that is, 24. Any non-zero value for this will override the CompleteDB flag for this database. For example, if the ConfigDB value is 13 and CompleteDB value for ConfigDB is 0, means that the entire DB will be vacuumed along with all the tables. However, if the timestamp of start of vacuum for the DB and any of the tables conflicts, then, vacuum will not be started for that table, and the DB will get precedence in this case. Max value: 24,24 (24 is same as 12:00 AM)				
 Important: It is not recommended to start table level vacuuming for all tables at the same time as it will increase number of transactions to the database. Database level vacuuming takes care of table level vacuuming, that means it vacuums whole database including all the tables present in that database so at critical point if we want to start vacuuming on all tables at the same time, at that point, we can start only database level vacuum. If we want to vacuum one or more (but not all) tables from the database, in that case we can use table level vacuuming by enabling vacuum for that tables.					
	ConfigDB	TrapDB	AuditDB	BulkDB	P2PDB
	12, 12	12, 12	12, 12	12, 12	12, 12

Key	Description and Values				
Table Name = hh, hh	ConfigDB	TrapDB	AuditDB	BulkDB	P2PDB
	CompleteDB= lboxer = 00,00portmontable = 00,00boxeruserinfo = 00,00userpreference = 00,00processthreshold = 00,00ippooldefaults = 00,00scbrdefaults = 00,00csmsessioninfo = 00,00bkinfo = 00, 00graphscreeninfo = 00,00batchjobcleanup = 00,00batchjobinfo = 00,00boxeronmap = 00,00dbbackupinfo = 00,00mactable = 00,00p2pinfo = 00,00updateinfo = 00,00userinfo = 00,00dbcurrent = 00,00hostname = 00,00syslogkeywordlist = 00,00syslogmsgfilename = 00,00	CompleteDB= ltrap = 00,00deletedtrap = 00,00forwardinginfo = 00,00forwardpurgeinfo = 00,00mailinfo = 00,00mailmessage = 00,00configure = 00,00schedule = 00,00forwardaddresses = 00,00pendingtrap = 00,00trap_current = 00,00trapoperdetails = 00,00	CompleteDB= lauditlog = 00,00auditlog_current = 00,00chassisinfo = 00,00cpuinfo = 00,00daughtercardinfo = 00,00hardwareactivity = 00,00hardwareinfo = 00,00lrcrcspiointo = 00,00pactacinfo = 00,00rowcount = 00,00smcinfo = 00,00spccardinfo = 00,00imglasteventgentime = 00,00	CompleteDB= lcard = 00,00card_current = 00,00port = 00,00port_current = 00,00system = 00,00system_current = 00,00ppp = 00,00ppp_current = 00,00mipfa = 00,00mipfa_current = 00,00mipha = 00,00mipha_current = 00,00rp = 00,00rp_current = 00,00gtpc = 00,00gtpc_current = 00,00gtpp = 00,00gtpp_current = 00,00ippool = 00,00ippool_current = 00,00apn = 00,00apn_current = 00,00lac = 00,00lac_current = 00,00closedrp = 00,00closedrp_current = 00,00	CompleteDB= lbwstat = 00,00bwstat_current = 00,00dailystat = 00,00dailystat_current = 00,00hourlystat = 00,00hourlystat_current = 00,00protocolstat = 00,00protocolstat_current = 00,00scbrdailystats = 00,00scbrdailystats_current = 00,00scbrhourlystats = 00,00scbrhourlystats_current = 00,00scbrstats = 00,00scbrstats_current = 00,00temp2p = 00,00thresholdstats = 00,00

■ The vacuum.cfg File

Key	Description and Values				
				radius = 00,00radius_curren t = 00,00imgaccess = 00,00ecs = 00,00ecs_current = 00,00misc = 00,00misc_current = 00,00ipsg = 00,00ipsg_current = 00,00asngw = 00,00asngw_curren t = 00,00sgsn = 00,00sgsn_current = 00,00sgtp = 00,00sgtp_current = 00,00sccp = 00,00sccp_current = 00,00ss7rd = 00,00ss7rd_curren t = 00,00mipv6ha = 00,00mipv6ha_curren t = 00,00context = 00,00context_curren t = 00,00cscf = 00,00cscf_current = 00,00ss7link = 00,00ss7link_curren t = 00,00gprs = 00,00gprs_current = 00,00	

The wblast.cfg File

This file provides information on the white black list database file paths that are mainly used for content filtering.

Key	Description
WBLIST:	This section describes the parameters that store Content Filtering Server information.
WblastPath	White Black list file path: This specifies the path where white black list database files are located. WblastPath = <i>./flash/cf/cfdatabases/wblastdb/</i>

Appendix C

XML Output Formats

This appendix provides information about the various eXtensible Markup Language (XML) file format definitions in the Bulkstat server. The XML file format definition is based on XML schema. The 3GPP standards are followed to generate XML report files in the XML report generator. These defined file format definitions correspond to each other (except for some minor XML specific optimizations).

This chapter includes the following topics:

- [Supported XML Output Formats](#)
- [Examples of XML Output Formats](#)
- [File Naming Conventions](#)
- [Supported Standards](#)

Supported XML Output Formats

The following XML output formats are supported:

- **DTD Based Format:** This format is DTD based and it can be enabled/disabled using the configurable parameter, 'XMLFileFormat' provided in the configuration file *bsserver.cfg* in the */<ems_dir>/etc* directory.
- **3GPP Format:** This is the new and default 3GPP recommended format to generate the XML report file. This format reduces the XML file size.

WEM generates two types of files for the above two formats. These are individual XML files for all subsystems and single XML file for all subsystems which can be configured using the parameter 'XMLFileType' in the *bsserver.cfg* file.

Refer *Appendix B* for information on the configurable parameters in the *bsserver.cfg* file.

Examples of XML Output Formats

This section provides the sample outputs for the DTD based and 3GPP XML formats.

DTD Based Format

The following output is an example of individual files for all subsystems in DTD based XML format.

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<!DOCTYPE mdc SYSTEM "MeasurementStat.dtd">
<?xml-stylesheet type="text/xsl" href="simple_table.xsl" ?>
<mdc>
  <mfh>
    <ffv>2</ffv>
    <sn>Starent Network Inc.</sn>
    <st>MSC</st>
    <vn>Samsung corp.</vn>
    <cbt>2006-01-03 13:10:00</cbt>
  </mfh>
<md>
  <neid>
    <neun></neun>
    <nedn></nedn>
    <nesw></nesw>
  </neid>
  <mi>
    <mts>2006-01-03 13:15:00</mts>
    <gp>300</gp>
    <rsf>>false</rsf>
```

```
<ms>
<msn>CardStat</msn>
<sf>>false</sf>
<es>>false</es>
<mt p="0">card</mt>
<mt p="1">cpubusy</mt>
<mt p="2">cpuidle</mt>
<mt p="3">numproc</mt>
<mt p="4">memused</mt>
<mt p="5">memtotal</mt>
<mv>
<moid> card=17 </moid>
<r p="0">6</r>
<r p="1">0.76</r>
<r p="2">99.24</r>
<r p="3">158</r>
<r p="4">1057704</r>
<r p="5">4194304</r>
</mv>
<mv>
<moid> card=8 </moid>
<r p="0">8</r>
<r p="1">0.45</r>
<r p="2">99.55</r>
<r p="3">65</r>
<r p="4">306512</r>
<r p="5">1048576</r>
</mv>
</ms>
```

```
</mi>
</md>
<mf>
<ts>2006-01-03 13:15:00</ts>
</mf>
</md>
```

This following output is an example of all subsystems in a single file in DTD based XML format.

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<!DOCTYPE mdc SYSTEM "MeasurementStat.dtd">
<?xml-stylesheet type="text/xsl" href="simple_table_all.xsl" ?>
<mdc>
  <mf>
    <ffv>2</ffv>
    <sn>Starent Network Inc.</sn>
    <st>MSC</st>
    <vn>Samsung corp.</vn>
    <cbt>2006-01-03 13:10:00</cbt>
  </mf>
  <md>
    <neid>
      <neun></neun>
      <nedn></nedn>
      <nesw></nesw>
    </neid>
    <mi>
      <mts>2006-01-03 13:15:00</mts>
      <gp>300</gp>
      <rsf>false</rsf>
    <ms>
```

```
<msn>CardStat</msn>
<sf>>false</sf>
<es>>false</es>
<mt p="0">card</mt>
<mt p="1">cpubusy</mt>
<mt p="2">cpuidle</mt>
<mt p="3">numproc</mt>
<mt p="4">memused</mt>
<mt p="5">memtotal</mt>
<mv>
<moid> card=17 </moid>
<r p="0">17</r>
<r p="1">0</r>
<r p="2">100</r>
<r p="3">0</r>
<r p="4">0</r>
<r p="5">0</r>
</mv>
<mv>
<moid> card=8 </moid>
<r p="0">8</r>
<r p="1">0.45</r>
<r p="2">99.55</r>
<r p="3">65</r>
<r p="4">306512</r>
<r p="5">1048576</r>
</mv>
</ms>
<ms>
```

```
<msn>PortStat</msn>
<sf>>false</sf>
<es>>false</es>
<mt p="0">card</mt>
<mt p="1">port</mt>
<mt p="2">rxbytes</mt>
<mt p="3">txbytes</mt>
<mt p="4">ucast_inpackets</mt>
<mt p="5">ucast_outpackets</mt>
<mt p="6">mcast_inpackets</mt>
<mt p="7">mcast_outpackets</mt>
<mt p="8">bcast_inpackets</mt>
<mt p="9">bcast_outpackets</mt>
<mt p="10">rxpackets</mt>
<mt p="11">txpackets</mt>
<mt p="12">rxdischbytes</mt>
<mt p="13">rxdiscpackets</mt>
<mt p="14">txdischbytes</mt>
<mt p="15">txdiscpackets</mt>
<mt p="16">maxrate</mt>
<mt p="17">frag-rcvd</mt>
<mt p="18">pkt-reassembled</mt>
<mt p="19">frag-tokernel</mt>
<mv>
<moid> card=17,port=1 </moid>
<r p="0">17</r>
<r p="1">1</r>
<r p="2">43346</r>
<r p="3">1792</r>
```

```
<r p="4">328</r>
<r p="5">28</r>
<r p="6">0</r>
<r p="7">0</r>
<r p="8">1</r>
<r p="9">0</r>
<r p="10">329</r>
<r p="11">28</r>
<r p="12">0</r>
<r p="13">0</r>
<r p="14">0</r>
<r p="15">0</r>
<r p="16">0</r>
<r p="17">0</r>
<r p="18">0</r>
<r p="19">0</r>
</mv>
</ms>
<ms>
<msn>IPPoolStat</msn>
<sf>>false</sf>
<es>>false</es>
<mt p="0">vpnname</mt>
<mt p="1">vpnid</mt>
<mt p="2">name</mt>
<mt p="3">used</mt>
<mt p="4">hold</mt>
<mt p="5">release</mt>
<mt p="6">free</mt>
```

```

<mt p="7">type</mt>
<mt p="8">priority</mt>
<mt p="9">state</mt>
<mv>
<moid> vpnname=network,vpnid=2,name=Pool </moid>
<r p="0">network</r>
<r p="1">2</r>
<r p="2">Pool</r>
<r p="3">0</r>
<r p="4">0</r>
<r p="5">0</r>
<r p="6">254</r>
<r p="7">S</r>
<r p="8">0</r>
<r p="9">G</r>
</mv>
</ms>
</mi>
</md>
<mff>
<ts>2006-01-03 13:15:00</ts>
</mff>
</mdc>

```

3GPP Format

The following output is an example of individual files for all subsystems in 3GPP XML format.

```

<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<!--?xml-stylesheet type="text/xsl" href="MeasDataCollection.xsl?"-->

```

```

<measCollecFile
xmlns="http://www.3gpp.org/ftp/specs/archive/32_series/32.435#measCollec"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.3gpp.org/ftp/specs/archive/32_series/32.435#measC
ollec http://www.3gpp.org/ftp/specs/archive/32_series/32.435#measCollec">

  <fileHeader dnPrefix="Unknown" fileFormatVersion="2" vendorName="Sagar">

    <fileSender elementType="Nikhil" localDn="Same"/>

    <measCollec beginTime="2008-04-25 04:40:00"/>

  </fileHeader>

  <measData>

    <managedElement localDn="Same" swVersion="7.1.19504" userLabel="st16"/>

    <measInfo>

      <job jobId="7381"/>

      <granPeriod duration="PT300S" endTime="2008-04-25 04:45:00"/>

      <msn>CardStat</msn>

      <suspect>>false</suspect>

      <measTypes>card cpubusy cpuidle numproc memused memtotal</measTypes>

      <measValue measObjLdn="card=22">

        <measResults>22 0 100 0 0 0</measResults>

      </measValue>

      <measValue measObjLdn="card=24">

        <measResults>24 0 100 0 0 0</measResults>

      </measValue>

    </measInfo>

  </measData>

  <fileFooter>

    <measCollec endTime="2008-04-25 04:45:00"/>

  </fileFooter>

</measCollecFile>

```

This following output is an example of all subsystems in a single file in 3GPP XML format.

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>

<!--?xml-stylesheet type="text/xsl" href="MeasDataCollection.xsl? "-->

<measCollecFile
xmlns="http://www.3gpp.org/ftp/specs/archive/32_series/32.435#measCollec"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.3gpp.org/ftp/specs/archive/32_series/32.435#measCollec
http://www.3gpp.org/ftp/specs/archive/32_series/32.435#measCollec">

  <fileHeader dnPrefix="Unknown" fileFormatVersion="2" vendorName="Sagar">

    <fileSender elementType="Nikhil" localDn="Same"/>

    <measCollec beginTime="2008-04-25 04:40:00"/>

  </fileHeader>

  <measData>

    <managedElement localDn="Same" swVersion="7.1.19504" userLabel="st16"/>

    <measInfo>

      <job jobId="7381"/>

      <granPeriod duration="PT300S" endTime="2008-04-25 04:45:00"/>

      <msn>CardStat</msn>

      <suspect>>false</suspect>

      <measTypes>card cpubusy cpuidle numproc memused memtotal</measTypes>

      <measValue measObjLdn="card=22">

        <measResults>22 0 100 0 0 0</measResults>

      </measValue>

      <measValue measObjLdn="card=24">

        <measResults>24 0 100 0 0 0</measResults>

      </measValue>

      <msn>PortStat</msn>

      <suspect>>false</suspect>
```

```

    <measTypes>card port rxbytes txbytes ucast_inpackets ucast_outpackets
mcast_inpackets mcast_outpackets bcast_inpackets bcast_outpackets
rxpackets txpackets rxdisbytes rxdiscpackets txdisbytes txdiscpackets
maxrate frag-rcvd pkt-reassembled frag-tokernel</measTypes>

    <measValue measObjLdn="card=22,port=1">

    <measResults>22 1 1236 1024 16 16 0 0 2 0 18 16 0 0 0 0 100000000 0 0
0</measResults>

    </measValue>

    <measValue measObjLdn="card=22,port=2">

    <measResults>22 2 212 0 0 0 0 0 2 0 2 0 0 0 0 0 100000000 0 0
0</measResults>

    </measValue>

    <msn>IPPoolStat</msn>

    <suspect>>false</suspect>

    <measTypes>vpnname vpnid name startaddr groupname used hold release free
type priority state</measTypes>

    <measValue
measObjLdn="vpnname=egress,vpnid=6,name=dynamic,startaddr=17.0.0.1,groupn
ame=">

    <measResults>egress 6 dynamic 17.0.0.1 0 0 0 65534 P 0 G</measResults>

    </measValue>

    <measValue
measObjLdn="vpnname=egress,vpnid=6,name=static,startaddr=18.0.0.1,groupna
me=">

    <measResults>egress 6 static 18.0.0.1 0 0 0 65534 S 0 G</measResults>

    </measValue>

    </measInfo>

    </measData>

    <fileFooter>

    <measCollec endTime="2008-04-25 04:45:00"/>

    </fileFooter>

    </measCollecFile>

```

File Naming Conventions

The naming conventions for the files are as per 3GPP standard. The naming convention is different only for individual subsystem files where we include subsystem names in the file name (for example, “CardStat”, “PortStat”, etc.).

The following convention will be applied for measurement result file naming:

```
<Type><Startdate>.<Starttime>- [<Enddate>.<Endtime>_ [<UniqueId>] [:<RC>]
```

Field Name	Description
Type	Indicates if the file contains measurement results for single or multiple NEs and/or granularity periods, where: <ul style="list-style-type: none"> • “A” indicates single NE, single granularity period; • “B” indicates multiple NEs, single granularity period; • “C” indicates single NE, multiple granularity periods; • “D” indicates multiple NEs, multiple granularity periods.
Startdate	Indicates the date when the granularity period began if the Type field is set to “A” or “B”. If the Type field is either “C” or “D” then, Startdate contains the date when the first granularity period of the measurement results contained in the file started. The Startdate field is of the form YYYYMMDD, where: <ul style="list-style-type: none"> • YYYY is the year in four digit notation; • MM is the month in two digit notation (01-12); • DD is the day in two digit notation (01-31).
Starttime	Indicates the time when the granularity period began if the Type field is set to A or B. If the Type field is either “C” or “D” then, Starttime contains the time when the first granularity period of the measurement results contained in the file began. The Starttime field is of the form HHMMshmm, where: <ul style="list-style-type: none"> • HH is the two digit hour of the day (local time), based on 24 hour clock (00-23); • MM is the two digit minute of the hour (local time), possible values are 00, 05, 10, 15, 20, 25, 30, 35, 40, 45, 50, and 55; • s is the sign of the local time differential from UTC (+ or -), in case the time differential to UTC is 0 then the sign may be arbitrarily set to “+” or “-”; • hh is the two digit number of hours of the local time differential from UTC (00-23); • mm is the two digit number of minutes of the local time differential from UTC (00-59).
Enddate	This field will only be included if the Type field is set to “C” or “D”, that is, measurement results for multiple granularity periods are contained in the file. It identifies the date when the last granularity period of these measurements ended, and its structure corresponds to the Startdate field.
Endtime	Indicates the time when the granularity period ended if the Type field is set to A or B. If the Type field is either “C” or “D” then, Endtime contains the time when the last granularity period of the measurement results contained in the file ended. Its structure corresponds to the Starttime field, however, the allowed values for the minute of the hour are 05, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, and 00.

Field Name	Description
UniqueId	This is the name of the NE, EM or domain (for example, a distinguishedName). The field may be omitted only if the distinguishedName is not available from the CM applications.
RC	This parameter is a running count, starting with the value of “1”, and will be appended only if the filename is not unanimous, that is, more than one file is generated and all other parameters of the file name are identical. Therefore, it may only be used by the Network Element Manager (EM), since the described situation can not occur with Network Element (NE) generated files.

A few examples describing the file naming convention are as follows:

- File name: A20000626.2315+0200-2330+0200_NodeBId;
 Meaning: File produced by NodeB <NodeBId> on June 26, 2000, granularity period 15 minutes from 23:15 local to 23:30 local, with a time differential of +2 hours against UTC.
- File name: B20021224.1700-1130-1705-1130_EMId,
 Meaning: File containing results for multiple NEs, produced by EM <EMId> on December 24, 2002, granularity period 5 minutes from 17:00 local to 17:05 local, with a time differential of –11:30 hours against UTC.
- File name: D20050907.1030+0000-20050909.1500+0000_DomainId:2,
 Meaning: File containing results for NEs belonging to domain <DomainId>, start of first granularity period 07 September 2005, 10:30 local, end of last granularity period 09 September 2005, 15:00 local, with a time differential of 0 against UTC. This file is produced by the EM managing the domain, and it is the second file for this domain/granularity periods combination.

Supported Standards

WEM complies with the following 3rd Generation Partnership Project (3GPP) standards for generation of XML report files in DTD based format and 3GPP format respectively.

- **3GPP TS 32.401 V4.1.0 (2001-12):** “Concept and Requirements”
- **3GPP TS 32.435 V6.2.0 (2006-03):** “Performance measurement: eXtensible Markup Language (XML) file format definition”