

EMS for AudioCodes' Media Gateways and Servers

AudioCodes EMS Element Management System

Element Management System (EMS) Release Notes

Version 5.6

Document # LTRT-90519



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Note: The EMS supports the following products:

- Mediant 8000, 5000, 3000, 2000, 1000 Media Gateways
- IPmedia 2000 / 3000 / 5000 Media Server
- MediaPack Media Gateways MP-102 (FXS), MP-104 (FXS and FXO), MP-108 (FXS and FXO), MP-112 (FXS), MP-114 (FXS), MP-118 (FXS) and MP-124 (FXS), collectively referred to as MediaPack.
- TP-260 / IPM-260

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Abbreviations and Terminology

Each abbreviation, unless widely used, is spelled out in full when first used. Only industry-standard terms are used throughout this manual. The \$ symbol indicates hexadecimal notation.

Related Documentation

Manual Name
Mediant 5000 / 8000 Media Gateway Installation, Operation & Maintenance Manual
Mediant 5000 / 8000 Media Gateway Release Notes
Mediant 3000 User's Manual
IPmedia 3000 Media Server User's Manual
Mediant 2000 User's Manual
IPmedia 2000 Media Server User's Manual
MediaPack User's Manual
Element Management System (EMS) Server Installation, Operation & Maintenance Manual
Element Management System (EMS) Product Description
Element Management System (EMS) User's Manual
Element Management System (EMS) Online Help
Mediant 5000 / 8000 Media Gateway Programmer's User Manual
EMS Parameter Guide for the Mediant 5000 and Mediant 8000 Gateways
EMS Parameter Guide for Mediant 1000, Mediant 2000, Mediant 3000, IPmedia 3000 and IPmedia 2000
EMS Parameter Guide for MediaPack

1 Managed VoIP Equipment

The list of media gateways, media servers and boards (below) is accurate for version 5.6 **Bold** font indicates new products / versions.

- Mediant 5000/8000 Media Gateway and the IPmedia 5000 Media Server, versions **5.6**, 5.4, 5.2
- Mediant 3000 Media Gateways and IPMedia 3000 Media Server: version 5.6, 5.4, 5.2
- Mediant 2000 Media Gateways and IPMedia 2000 Media Server: version 5.6, 5.4, 5.2
- TP-260, IPM-260: version 5.6, 5.4, 5.2
- Mediant 1000: version 5.6, 5.4, 5.2
- Mediant 600: version 5.6
- MediaPack Media Gateways: versions 5.6, 5.4, 5.2

Reader's Notes

2 New Features in EMS Version 5.6

2.1 General

Java Version Update

Java version has been updated to Java 6 JDK from Java 5. EMS uses build 1.6.0_06.

Oracle Database Version Update

The Oracle Database version has been updated to version 9.2.0.8 from 9.2.0.7. During the current EMS version installation, Oracle security patches are by default installed with Oracle database security hardening.

Apache version upgrade

The Apache Web server running on the EMS server machine and used for JAWS and Gateway Software and Auxiliary files upgrade has been upgraded from version 2.2.4 to version 2.2.6 (openssl version is version 0.9.8h).

EMS Server Configuration display in the EMS Client GUI

The EMS Client now includes an option to display EMS server related settings such as Network Interfaces and their redundancy definitions, Server Java version, Server security status, Web Server and NTP server information and statuses.

EMS Server Maintenance Improvements

The EMS Server Solaris Manager has been enhanced with the following features:

- Apache Web Server Management (status / start / stop), ability to disable HTTP (port 80), HTTPS (port 443) and JAWS applications. The Apache Web Server is used for JAWS and software and auxiliary files upgrade for low density gateways.
- You can now define additional SNMP managers in the EMS for low density gateways. During the Mediant 600/ 1000 / 2000 /3000 & MP Gateway definition process in the EMS GUI (ADD GW), EMS will search for additional IP addresses and automatically add them as a manager to the SNMP managers table.
- The **Show Info** command has been enhanced with EMS Application and Oracle database processes statuses. The Show Info option provides the general EMS Server information from the Solaris operating system. In this version, this command includes the following: EMS Version; EMS Server Process Status; Oracle Server Status; Apache Server Status; Java Version; Memory size and Time Zone information.
- A File Integrity Tool (Yafic) Management (start / stop commands) is now used. The File Integrity checker tool periodically verifies whether file attributes were changed (permissions/mode, inode #, number of links, user id, group id, size, access time, modification time, creation/inode modification time). File Integrity violation problems are reported via EMS Security Events.
- Oracle Hardening is now performed as part of the installation process. This option is no longer available in the Solaris Manager.
- The EMS server could be defined as both NTP Client and NTP Server (for managed Gateways). In this version, the EMS NTP Client definition can support provisioning of up to 4 NTP servers.
- The NBIF user is used by a Network Management system to access the ACEMS/NBIF folder, for poll backup, topology and performance monitoring data. NBIF user password management is now supported in the Solaris Manager.

EMS Server North Bound Interface changes

The EMS Server has defined a new /ACEMS/NBIF folder for all the files provided for the NMS system. It includes EMS topology definition (a list of Regions and GWs defined in the EMS application), Performance Monitoring Files and Mediant 5000 / 8000 and EMS Server backup files. Detailed descriptions can be found in the document LTRT-19206 OAM Integration Guide. During the EMS server installation process, a new UNIX user 'nbif' is defined. This user has permission to access /ACEMS/NBIF and should be the user for this purpose.

Software Manager – Save file

The ability to externally save files that have already been loaded to the EMS Software Manager has been added.

Online Help

The Online help includes links to Mediant 5000, IPMedia 5000, Mediant 8000 and IPMedia 8000 IOM Guides documents.

OpenCA OCSP Daemon (OCSPD)

OpenCA OCSP Daemon (OCSPD) is an RFC2560 compliant OCSP responder. It can be used to verify the statuses of MEGACO/SIP device certificates via OCSP on-line protocol.

The following functionality is provided by OpenCA OCSPD:

- CRL retrieval via HTTP, HTTPS and LDAP protocols
- Support for multiple CAs (one CRL per CA)
- Periodic reload of the CRL file

2.2 Fault Management

Carrier-Grade Alarms System between EMS & Media Gateway's

EMS now has the ability to synchronize with Media Gateways on missed alarms which could occur due to Network Connectivity or other problems. EMS will retrieve these missed alarms and add them to the Alarm Browser / History windows. Upon alarms retrieval, depending on the trap forwarding rules, alarms will also be forwarded.

Events View in alarm browser

Alarms and Events are now displayed as separate graphic entities in the Alarm Browser and History screens. You can easily sort between alarms and events, or filter out events from the Alarm Browser and History windows.

Trap Forwarding

SNMP trap forwarding from the EMS application has been enhanced with the following features:

- Multiple Trap forwarding destinations are supported
- Media Gateway and EMS alarms and events can be forwarded in the following different types: SNMPv2 or v3 traps, Mail notifications, SMS, or Syslog messages.
- Each one of the trap destination users can filter trap forwarding according to the following trap types: (Event or Alarm);the source (EMS or Media Gateway);Alarm Severity or Media Gateway IP addresses.

Alarms & Journal Unified View and Filters

The user can view a combined table with all the alarms, events and journal records in order to correlate user activities with system behavior and responses. The combined view is opened from the Alarms Browser, Alarm History and Journal Frames. A unified Advanced Filter allows you to view the filter according to Time interval, GW IP address, User name or Action Type, Alarm Name, Source or Free text in Description Fields.

Alarm Browser & History Columns enhancements

A new option to select viewed columns in the Alarm Browser and Alarms History window has been added. Default columns are not changed; however, in this version the user can add a new column to view the Source Description field (implemented for Mediant 5000 / 8000 and for IPmedia 5000 / 8000 GWs). The Source description field includes the object name as it defined by the user in the Name field in each one of the Provisioning Screens. Users can also decide to reduce the number of viewed columns. You can view the Source Description column by right-clicking on the Alarms Browser and Alarms History table's title bars.

New Alarms / Events Support

A list of new alarms have been added in this version. For an updated list of alarms per GW type, refer to the relevant OAM Guide Alarms Chapter.

2.3 Security Management (EMS Server)

EMS Server File Integrity Checking

The File Integrity checker tool periodically verifies whether file attributes were changed (permissions/mode, inode #, number of links, user id, group id, size, access time, modification time, creation/inode modification time). File Integrity violation problems are reported via EMS Security Events. The File Integrity checker tool runs on the EMS server machine.

Intrusion Detection System

The Intrusion Detection tool scans predefined Solaris system files for specific danger patterns which might indicate whether the EMS server machine was accessed and / or modified by an external intruder. Intrusion Detection problems are reported via EMS Security Events. The Intrusion Detection tool runs on the EMS Server machine.

EMS Server Security Patches loading during version installation & upgrade

The EMS Server installation now performs an installation of security patches set as part of the application install or upgrade. It will also remove unnecessary and unused Solaris packages.

2.4 Configuration Management and Maintenance

Support of new features and parameters, including new configuration and performance monitoring parameters.

2.4.1 Mediant, IPmedia 5000 / 8000 Related Features

2.4.1.1 Supported VoP Board Types

VoP board types (and application types) supported in the version are:

- TP-6310 OC-3/STM-1/T3

- IPM-6310 OC-3/STM-1/T3
- TP-8410
- IPM-8410 Video

2.4.1.2 Timing Module new features

Line timing mode is now supported for the TP8410 board.

In addition, the new 'Advanced None' mode has been introduced; where each TP board synchronizes its clock using one of the E1/T1 trunks. Users can provision priority for each one of the E1/T1 Trunks.

2.4.1.3 MGW & Boards Level Provisioning changes

MGW & VoP Board Provisioning screens have been divided into Properties and Advanced Properties screen to allow more user friendly navigation options. For example, when you select the Advanced Properties button, you can provision the Diagnostics, Debugging and Security Settings.

2.4.1.4 Multiple Redundancy Groups

The Media Gateway now supports multiple redundancy groups definition and assignment of the VoP boards to multiple groups. Multiple Redundancy groups may be used under the following circumstances:

- Media Gateway boards have different hardware or application types installed in the chassis
- Media Gateway boards have different configurations, which makes it impossible to provide Hot redundancy for all boards by a single redundancy group.

Each redundancy group has its own redundant board, accompanied by a redundant RTM module, which is capable of protecting service on a failed active board within the group.

2.4.1.5 Lock / Unlock of SC Board

New actions that enable you to reset a redundant SC board are supported: Lock / Unlock.

2.4.1.6 Backup / Restore of the Media Gateway Configuration

The EMS now performs automatic backup of the Gateway configuration file according to user provisioned frequency. In addition, the user now has the option to perform a random backup of the Gateway configuration.

2.4.1.7 GW Log Files Collection

An new option to collect Gateway log files has been added to the main status screen maintenance drop down icon. The user can select from which SC boards they wish to collect the log files (primary or secondary) and which files to collect (SC Log, Core file, VoP Boards log file and / or GW configuration file). Log files should serve customers and FAEs for troubleshooting purposes.

2.4.1.8 TP INI file Collection

A new option to save a TP/IPM board INI file has been added. This option is available from the main status screen by right clicking on a specific TP board. The INI is used by customers and FAEs for troubleshooting purposes.

2.4.1.9 SS7 Static Route Contexts support

New provisioning and status screens have been added to support SS7 Static Route Context definition, status and maintenance.

2.4.1.10 Performance Monitoring – Aggregated PMs support

New Performance Monitoring parameters aggregating all the VoP boards statistics are supported. These parameters are defined at the MGW level. For a detailed specification of the parameters list, refer to the Mediant IPMedia 5000 8000 OAM Guide Version 5_6.

2.4.2 New Features of the TP-260/Mediant 1000/2000/3000, IPM-260/IPmedia 2000/3000 and MediaPack

2.4.2.1 Mediant 600 support

A new status screen and appropriate navigation buttons have been added for the Mediant 600. This product has the same navigation concepts and provisioning screens as the Mediant 1000.

2.4.2.2 Mediant 3000 – Timing Module & BITs status and Provisioning

A new status indication on the main Mediant 3000 status screen SA module representing BITs A/B and Active Source of A and B has been added. Double clicking on the BITS status represents both SAT cards, Timing Unit statuses, BITs A and B detailed statuses and PLL Lock Indications.

New provisioning parameters defining Timing Module configuration have also been added to the Telephony Provisioning screen.

2.4.2.3 SS7 MTP 3 Point Code Sharing

A new set parameters enabling SS7 MTP 3 Point code sharing is supported in Signaling Provisioning screens.

2.4.2.4 SS7 Static Route Contexts support

New provisioning and status screens have been added to support SS7 Static Route Context definition and maintenance.

2.4.2.5 IPv6 Provisioning Support

Provisioning of IPv6 IP addresses has been added to relevant provisioning screens.

2.4.2.6 X.509 PKI Certificates Enhancements

Support for X.509 Public Key Infrastructure. The EMS enables you to generate self-signed certificates, private files and CSR requests.

2.4.2.7 IPMedia 2000 / 3000 – Voice Prompt Repository update

When adding a voice prompt file to the Software Manager, the EMS verifies whether there is enough available memory on the Media Gateway, If there is not enough memory, the EMS advises the user to reset the Media Gateway.

2.4.2.8 Performance Monitoring – Threshold definitions

Performance Threshold definition is supported. When predefined thresholds are exceeded, an appropriate Alarm is issued by the Gateway and displayed in the EMS. For example: once 'Lifetime in Seconds (Max)' has exceeded the user defined 'Lifetime High Threshold', a Threshold exceed alarm is generated.

2.4.2.9 Mediant 3000 – V5.2 protocol support

The ability to provision and monitor V5.2 Protocol Interfaces and Links has been added to the EMS application. In addition, a new download file type is supported. The V5.2 users file includes definitions for Port/Line numbers and L3 addresses for all the V5.2 interfaces in the Media Gateway.

3 New Features in EMS Version 5.4

3.1 General

EMS Server Maintenance Improvements

A new centralized tool to perform EMS server machine monitoring and management, including: automatic logs collection, networking configuration, security enabling (various types of hardening, passwords modifications, maintenance of the Solaris services (such as NTP, date and time, etc.).

Multiple Ethernet Interfaces on the EMS Server

EMS Server now supports up to 4 Ethernet Interfaces. It is recommended to define the Ethernet interfaces as in the following example:

- North Bound (EMS clients)
- South Bound (Media Gateways / Media Servers)
- Utility : for backup / Terminal Servers

Ethernet Interfaces Redundancy

EMS Server supports up to 4 Ethernet interfaces. When defining redundancy, the following is recommended:

- North Bound 1+1 – Active stand by (EMS clients)
- South Bound 1+1 – Active stand by (Media Gateways / Media Servers)

NTPv4 on the EMS Server

EMS server NTP server package was upgraded to version 4. This is the latest version of the NTP package that is currently available.

Apache version upgrade

The Apache Web server running on the EMS server machine and used for JAWS and GWs Software and Auxiliary files upgrade has been upgraded to version 2.2.4.

3.2 Fault Management

Events Presentation and Filtering

Alarms and Events are now displayed as separate graphic entities in the Alarm Browser and History screens. You can easily sort between alarms and events, or filter out events from the Alarm Browser and History windows.

SNMPv3 Traps Forwarding

When defining SNMP Trap Forwarding , the user can optionally receive traps via SNMPv3 protocol. The Default is SNMPv2c traps.

Trap Forwarding enhancement

All traps received by the EMS from managed media gateways can be forwarded to the NMS (Network Management System) as SNMP traps. In addition, you can forward EMS alarms to the NMS.

This option enables you to determine whether to send EMS alarms and/or Media Gateway alarms to the NMS. If you have already provisioned the Gateway to send traps directly to the NMS, then in the EMS it is recommended to only send EMS alarms to the NMS (to avoid duplication and received same Gateway alarms from GW itself and from the EMS).

New Alarms Support

The entire list of new alarms added in current version by all the Gateways is supported in EMS. For an updated list of alarms per GW type, refer to the appropriate OAM Guide, Alarms Chapter.

3.3 Security Management

Radius Server Authentication and Authorization

Operator has an ability to perform EMS Users authentication and authorization using Radius Server. When provisioning centralized Users Authentication, it's recommended to use same Radius server for all the Audiocodes GWs.

Welcome (Advisory) Message

A predefined Welcome message can now be defined to appear in the EMS after a successful login.

Last Successful Login Time Display

The Last successful User login date and time are now displayed in the Title Bar of the EMS Main Screen.

EMS Authentication - Password aging provisioning

Non-radius provisioning for EMS password parameters is now available. Provisioning includes Password aging related parameters, such as **password update minimal period**, **password validity maximal period** can now be provisioned globally per EMS application. In addition EMS and Mediant 5000 / 8000 CLI users can now be synchronized. For more information, see EMS and CLI Users Synchronization.

3.4 Configuration Management and Maintenance

Support of new features and parameters, including new configuration and performance monitoring parameters.

3.4.1 Mediant, IPmedia 5000 / 8000 Related Features

3.4.1.1 Supported VoP Board Types

VoP board types (and application types) supported in the version are:

- TP-1610
- TP-6310 OC-3/STM-1/T3
- IPM-6310 OC-3/STM-1/T3
- TP-8410 (new board)
- IPM-8410 Video (new board)

3.4.1.2 Centralized Backup Files collection

EMS can now collect backup files (.bk files) that were created and locally stored on the Media Gateway and store them on the EMS server machine, thereby enabling centralized backup files location for all managed Gateways.

3.4.1.3 EMS and CLI Users Synchronization

EMS and Gateway CLI users can now be automatically synchronized by the EMS application. When a new user is added, removed or its password is changed in the EMS, it will be synchronized to all the managed gateways. The user will be able to enter both EMS and GW CLI with the same user and password defined in the EMS application.

3.4.1.4 Configuration Freeze Mode

A new provisioning mode called 'Configuration Freeze' has been defined. When this mode is enabled, configuration changes cannot be performed; however maintenance actions such as existing lock / unlock of existing entities) can be supported. This mode is recommended when Gateway provisioning is complete and the user wishes to avoid errors as a result of configuration changes. The Main Gateway status screen includes an

indication when Configuration Freeze is activated. In addition, an error message is displayed in EMS when the user performs a configuration change when this mode is enabled.

3.4.1.5 Provisioning Frame Apply Action

Provisioning Frame Apply Action now displays detailed description of parameters inconsistencies and errors.

3.4.1.6 NTP Servers Provisioning

Online configuration of multiple NTP servers is supported. The Status of the currently selected NTP server and information regarding all the provisioned NTP servers are now displayed. In addition, you can now unlock/lock the NTP server to determine whether to use this NTP server as the synchronize clock source and enable/disable communication with a specific NTP server.

3.4.1.7 Multiple VLANs support

The Gateway now supports separate VLANs for OAM, Control and Media. For the Media interface, up to two separate VLANs are supported.

3.4.1.8 X.509 PKI Certificates Enhancements

Support for 1X.509 Public Key Infrastructure. The EMS enables you to generate Self-signed certificates, Private files and CSR requests. In addition, files upload from Gateway Files Status to the User workstation is now supported.

3.4.1.9 Timing Module Enhancements

Overall PSTN System Clock status is now displayed on the main Gateway status screen. **Line Sync** Timing Module status for the TP-6310 board and provisioning support has also been added.

3.4.1.10 ES Port Mirroring

A new debug recording tool has been added. This tool enables you to intercept traffic from the ES boards and output the traffic to a debug file.

3.4.2 New Features of the TP-260/Mediant 1000/2000/3000, IPM-260/IPmedia 2000/3000 and MediaPack

3.4.2.1 Mediant 3000 - 8410 board including Video

A new status screen and appropriate navigation buttons have been added.

3.4.2.2 Mediant 1000 – support new modules BRI and IPMedia

The status screen has been enhanced to display new modules and their respective statuses as well as additional provisioning options for BRI trunks.

3.4.2.3 SS7 Provisioning for Digital GWs

MTP3 levels including Redundancy mode status, maintenance actions and provisioning have been added.

3.4.2.4 Multiple VLANs (Network Separation) provisioning support

Multiple VLANs can now be configured for all the gateways and IP network separation.

3.4.2.5 Performance Monitoring

Real-Time and History PMs are now supported. For a detailed list of PM parameters, refer to the OAM Guide for the relevant Media Gateway product.

4 New Features in EMS Version 5.2

4.1 General

Private Labeling

This section guides customers on how to perform customization and labeling of the EMS and media gateways, according to their specific requirements. The private labeling feature enables telephone companies to use the EMS under their own corporate name, gateway name, logos and images.

The customization procedure involves preparing files and images and rebuilding a customized CD or DVD.

The private labeling procedure covers the following items:

1. The license agreement presented during the installation process
2. The telephone company's logos and icons
3. The name of the telephone company, the names of its media gateways, and the names of the TP boards populating the gateways
4. Online Help

Navigation Buttons

Navigation buttons are located on the upper right side of the EMS status screen. The navigation buttons supported are: Home, Favorites, Back, Forward, Up and Online Help.

4.2 Fault Management

Support Standard Traps Presentation and Forwarding

A set of standard traps supported by each of the managed gateways is presented in the EMS application. In addition, when the Trap Forwarding feature is enabled, standard traps are forwarded to the provisioned Network Manager together with proprietary traps (as previously supported). For the precise list of supported traps, refer to the section on Alarms in the product management guide.

4.3 Configuration Management and Maintenance

4.3.1 Mediant, IPmedia 5000 / 8000 Related Features

4.3.1.1 Supported VoP Board Types

VoP board types (and application types) supported in the version are:

- TP-1610
- TP-6310 OC-3/STM-1/T3
- IPM-6310 OC-3/STM-1/T3

4.3.1.2 Timing Module and SAT Status

New graphical components representing the status of the SAT card, the Timing Module, and the External Interfaces were added to the main screen.

4.3.1.3 PEM Module Status

New graphical components representing the status of the Power Entry Module and the Power Inputs were added to the main screen.

4.3.1.4 Navigation Changes in Gateway and SIP Boards

The navigation buttons have changed at the system level and at the TP / IPM blade (SIP controlled) level. New options were added to support AMR coders and the status and provisioning of SIP Profiles.

4.3.1.5 Changes in the Online Software Upgrade Wizard

The Online Software Upgrade Wizard was modified to support VoP Boards Hitless Software Upgrade.

4.3.1.6 Security: Stop Using Root User during Online Software Upgrade

Due to extended security requirements, EMS and media gateway communication is no longer performed using root user permission. Both Telnet and FTP sessions, used in the Online Software Upgrade process, now use another user.

4.3.1.7 TP Debug Recording Support

The new capability of provisioning debug rules and start / stop debug recording is supported on the VoP boards.

4.3.1.8 Provisioning Frame - New Indication of HA

Each provisioning parameter can possibly impact the system's High Availability configuration. A new sign has therefore been added to the Provisioning Frame, indicating whether or not changing the parameter's value will impact HA.

4.3.1.9 Performance Monitoring - New Parameters

This version introduces the capability of viewing and collecting new parameters at the SS7 Node and SS7 Link levels.

4.3.2 New Features of the TP-260/Mediant 1000/2000/3000, IPM-260/IPmedia 2000/3000 and MediaPack

Support for New Features of Version 5.2 Boards

All new provisioning features are supported (for example, X.509 security, control and media features, SIP parameters and features, and IPmedia related provisioning).

Mediant 3000 – Hitless Software Upgrade

Mediant 3000 Hitless Software Upgrade is supported. The EMS checks (according to From and To version) whether it's possible to perform a hitless software upgrade and prompts the EMS user accordingly.

Multiple Gateways Lock / Unlock

It's possible to perform a single and multiple lock / unlock of the gateways from either the MG Status Screen or from the MGs Table screen. The locked gateway is color-coded gray in the MGs Tree and Status screen.

4.4 Performance Management

Users can open up to five separate real-time graphs in the same client application. They can use two graph types:

1. Table View
2. Line Graph

Line Graph is generally used when only a few parameters are compared. Table View is used when extensive data is displayed and analyzed.

Real-Time Performance Management – Table View

In each Table View, you can simultaneously view up to 50 parameters of up to 50 entities (Table 50X50).

Real-Time Performance Management – Graph View – Increasing the Number of Graph Items

Up to 10 graphs (parameters or objects) can be viewed in the same Real-Time graph, instead of the 5 available in the previous version.

5 New Features in EMS Version 5.0

5.1 General

New Product Types Managed by the EMS

- TP-260 / IPM-260
- MP-114 FXS + FXO / MP-118 FXS + FXO
- Mediant 1000 Analog and Digital Modules combination

Increased number of managed media gateways

The present EMS Full version manages up to:

- 10,000 MediaPack media gateways (instead of 3,000 in the previous version)
- 500 TP-260/Mediant 1000 / 2000 / 3000 Media Gateways and IPmedia 2000/3000 Media Servers (instead of 100 in the previous version)

EMS Server Installation and Upgrade

- EMS Server Operating System has been updated to Solaris version 10. Customers must install Solaris version 10 on the EMS server. If Solaris version 9 was previously installed, it must be replaced by Solaris version 10.
- Java version update. EMS version 5.0 runs on Java 5 JDK.

Number of Concurrent Clients

The number of concurrent clients has been increased to 25; in the previous version, it was 10.

5.2 Configuration Management and Maintenance

5.2.1 Mediant, IPmedia 5000 / 8000 Related Features

1. Supported VoP Board Types

VoP board types (and application types) supported in the version are:

- TP-1610
- TP-6310 OC-3/STM-1/T3
- IPM-6310 OC-3/STM-1/T3

2. Inventory Management

A new frame is available summarizing all the inventory data in the system such as boards occupancy, software / hardware versions, serial numbers and license keys. It is possible to export all the information in this frame in text file format.

3. Dual Subnet Separation Mode

In addition to the previously available option of one or three subnets, the current version now also supports the possibility of defining two subnets as follows: OAM, Control & Media, or OAM & Control, Media

4. Navigation Changes in MGW and SIP Boards

The navigation buttons have changed at the system level and at the TP / IPM blade (SIP controlled) level.

5. TP-6310 - PSTN & ATM Fiber Group status changes

HP is common for both Active and Redundant Links

6. TP/IPM Boards Graceful Lock

It's possible to define a graceful period during a TP board lock action. During this period, new calls will not be established but all current calls will be preserved.

7. TP/IPM Boards License Key

Commencing with version 5.0, users must purchase and correctly maintain the feature keys for all boards (1610 and 6310) in the Mediant media gateway. The current feature key inventory for all boards can be viewed via the EMS. If an additional feature is required, customer can obtain a new feature key file (given the s/n of the boards). This file can be applied to the media gateway / server.

8. TP Boards Configuration Backdoor

Provides an official back door to provision a TP board with unsupported parameters; these parameters are preserved during the Online Software Upgrade procedure.

5.2.2 New Features of the TP-260/Mediant 1000/2000/3000, IPM-260/IPmedia 2000/3000 and MediaPack

Support for New Features of Version 5.0 Boards

All new provisioning features are supported in the EMS (for example, VLANs and Interfaces separation, IPSec, IKE security, SIP parameters and features and IPmedia related provisioning).

Mediant 3000 - SONET / SDH / T3 Status

TP-6310 Interface status is provided. There is an option to configure the Mediant 3000 to operate in SONET / SDH or T3 mode.

MediaPack Line Test Support

The result of the last line test is displayed. There's also a possibility to run a line test on FXS and FXO lines.

Graceful Lock

All the gateways support graceful lock capabilities in the EMS.

5.3 Security Management

EMS Server Hardening Enhancements

Security Technical Implementation Guides (STIG) of the US Department of Defense (DoD) were used as a reference for security implementation for Solaris and Oracle Database components.

Journal Improvements

1. Context-sensitivity support. A new option to browse the Journal from the Alarm Browser panel in the main screen is available. The context-sensitive Journal displays all the actions performed by users on a specific object, for example, on Board#5/Trunk#7.
2. Additional Filtering options.

Reader's Notes

6 New Features in EMS Version 3.2

6.1 General

EMS Client Branding

Customers can receive an EMS client application without AudioCodes logos.

EMS Server Installation and Upgrade

- Oracle has been updated to version 9.2.0.7. The change manifests when installing the new EMS version and/or when upgrading the EMS server.
- Installation from DVD.
EMS server installation is provided in two formats: 5 CDs (previously provided format) or single DVD (new format).

Search MG Extensions

It's possible to search for a gateway according to the following criteria: Product Information (Product HW type, SW version, Status), IP or MAC address, or MG name. Case sensitive and partial words search is supported.

Save MGs List

It's possible to save all the basic information of the gateway (such as MG region, name, IP address, hardware type, software version, control protocol) and status (admin state, operative state, connection state) in a csv file.

6.2 Fault Management

Changes in Alarm Browser and Alarm History Screens

An additional column 'Description' has been added to the Alarm Browser and the Alarm History screens. This enables users to view all the most important information related to each alarm in each screen.

6.3 Configuration Management and Maintenance

6.3.1 Mediant 5000 / 8000 Related Features

Mediant 5000 PRO

A new Status screen is provided, displaying hardware components and information related to the chassis hardware.

Supported VoP Board Types

VoP board types (and application types) supported in the version are:

- TP-1610 (General MG / SIP MG)
- SB-1610 (General MG / SIP MG)
- TP-6310 STM1 (General MG / SIP MG)
- TP-6310 DS3 (General MG / SIP MG)
- IPM-6310 STM1 (General IPM / SIP IPM)
- IPM-6310 DS3 (General MG / SIP MG)

TP-6310 DS3 Board Support

- DS3 interfaces status and provisioning
- DS1 trunks can be viewed and configured either from each DS3 interface or directly from the TP-6310 (all the DS1 interfaces of the board).

Switch Board Features

- Severity colors support (Warning and Major)
- Alignment feature support
- Status representation of the External links in the Switch Board (enables viewing the separation of the network interfaces).
- Ports status and mirroring action

SIP Protocol Support

- Provisioning at the TP board level
- Full support for Protocol, Trunk Group, Routing and Manipulation parameters provisioning and status.

MTP3 Group Support

- Provisioning at the gateway level, enabling MTP3 redundancy over the boards.
- MTP3 related configuration has moved from the TP board level to MTP3 level.

Firewall & NFS Support

- Provisioning at the MG level, with attachment of the appropriate FW / NFS profile to each TP board.

Auxiliary Files Download

- The EMS Software Manager manages all devices' auxiliary files. When an auxiliary file is added to the Software Manager, it can be loaded to any device managed by the EMS.
- After File Downloading (via FTP), users can assign which auxiliary files are used by any TP board in the system.

6.3.2 Mediant 3000 HA 1+1 Support

- Two Mediant 3000 modes are supported: SIMPLEX and HA (High Availability).
- Hardware components status support, including chassis LEDs, fan status and speed, power supplies and PEM status. Board temperature is indicated.
- TP-6310 board active / redundant coloring is supported
- TP-6310 ATM LEDs are supported
- Commands supported: Switchover; Reset whole chassis or each board.

6.3.3 Mediant 3000/2000/1000 and MediaPack New Features

Support for New Features of v4.8 Boards

All new provisioning features are supported in the EMS (e.g., Firewall, NFS).

Changes in Software Download Process

Since the gateway saves its configuration, the EMS no longer needs to perform a configuration download (previously involving loading the base *ini* file and using SNMP set commands) after the software file (*cmp* file) is uploaded. This makes the software download process to multiple MGs much faster.

MP-11x Status Screen Changes

A new status screen compatible with the new UI design of the MP-11x MediaPack.

Gateway Network Configuration

Capability to change gateway IP, default gateway, and subnet mask.

6.4 Performance Management

Export PM Data in File Format

Users can choose to export all PM data collected by the background monitoring as a *csv* or *xml* file. A new file with all requested data is generated once in 15 minutes and appropriate alarm are sent. PM files can be accessed by a higher-level management system on the FTP server application that runs on EMS server machine.

Mediant 5000 / 8000 New PMs

New PM parameters at the ATM Fiber Group level.

6.5 Security Management

Default User Password Changes

In this version, the default User Name and Password is: acladmin / pass_1234

Reader's Notes

7 New Features in EMS Version 3.0

7.1 General

New Product Types Managed by EMS Operators

New products managed by this version:

- Mediant 3000
- IPmedia 3000
- Mediant 1000
- MP-11x

NTP Client and Server

The EMS server can be defined as both NTP client and server. To provide a clock mechanism to managed media gateways, the EMS server can be defined as NTP server. To provide an exact clock to managed media gateways and for itself, the EMS server must be defined as NTP client.

EMS Server Installation and Upgrade

The installation procedure of the EMS server has been changed to support full or patch installation. The EMS also supports upgrading from version 2.2 to 3.0. Refer to the EMS Server Installation and Maintenance Manual for detailed information.

EMS Client Installation via Java Web Start

Java Web Start provides a convenient and secure way to install and upgrade EMS client software from the EMS server machine. After installing EMS software using Java Web Start, the current client version is compared with the server version at each subsequent login. If a new server version is identified, the operator is prompted to upgrade the client software. No client CDs should be distributed to EMS operators.

7.2 Fault Management

Enhanced Alarms History Search

Operators can perform a string search in the Alarms History database by specifying any word or combination of words in the fields 'Textual Description' and 'Additional Info'.

New Frame: Alarm Details

The Alarm Details screen has been enhanced with the field 'Operator Info' into which operators can input information for future reference. Additionally, 'Previous' and 'Next' buttons have been added for quick navigation between the alarm details screens.

7.3 Configuration Management and Maintenance

7.3.1 Mediant 5000 / 8000 Related Features

Supported VoP Board Types

The following VoP board types are supported in the version:

- TP-1610
- SB-1610
- TP-6310
- IPM-6310

TP-6310 Board Support

The TP-6310 board is now supported, including appropriate Add / Remove actions, Status screens and Provisioning screens.

IPM-6310 Board Support

The IPM-6310 board is now supported, including appropriate Add / Remove actions, Status screens and Provisioning screens.

Configuring Media Gateway Security Profiles

The EMS now supports media gateway security profiles and configuration. To support secure communications between the EMS and media gateways and between the media gateways and MGC, a security profile should be configured.

Configuring Subnets and Interface Separation

To enable configuration of Subnet and Interface separation, additional provisioning has been added in the Media Gateway Provisioning screen.

TP Boards New High Availability Features

Operators are informed of each configuration change regarding board redundancy type and are provided a list of the precise parameters that cause redundancy downgrade.

TP-1610 Board SS7 Support

SS7, previously supported only by the TP-6310 boards, is now provided on the TP-1610 boards as well.

7.3.2 Mediant 8000 (Pro) Related Features

A new status screen is provided, displaying hardware components and information related to the chassis hardware.

7.3.3 Mediant 3000 / 2000 / 1000 and MediaPack Related Features

Increased number of managed media gateways

The present version of the EMS manages up to 3000 MediaPack media gateways.

Media Gateway Auto Detection

The EMS can automatically detect the following VoIP equipment and add it to the managed nodes tree:

Mediant 1000 / 2000 / 3000 and MediaPack media gateways

Media Gateway Predefinition

Users can predefine a MediaPack media gateway before the device is actually connected to the network. When first connecting to the media gateway, the EMS loads a configuration according to operator provisioning.

7.4 Performance Management

Enhanced Performance Management counters are provided for the Mediant 5000 / 8000 Media Gateways.

7.5 Security Management

Network Communication Security

Mediant 5000 / 8000: All network connectivity can be established in secured mode: All protocols (SNMPv2, Telnet and FTP) run over IPSec provisioned with a preshared key.

Mediant 1000 / 2000 / 3000 and MediaPacks: SNMPv2c communication is secured via community strings; HTTP communication can be performed via HTTPS while the EMS server runs HTTP server and the media gateway runs the HTTP client.

Media Gateway Management Behind NAT

The EMS can identify and manage Mediant 1000 / 2000 / 3000 and MediaPacks behind NAT.

Reader's Notes

8 New Features in EMS Version 2.2

8.1 Fault Management

Change Alarm Browser View and Level

Operators can modify the Alarm Browser's column order according to their preference. In addition, alarms can be sorted by any column (default sorting is according to time). Each user can select the alarms filtering level s/he wishes to apply in his/her Alarm Browser.

The following options are supported: Current Level Alarms (default), Node Level Alarms, Region Level Alarms, All Alarms - globe level.

Audio Indication on Receipt of Alarms

Users can choose whether to enable/disable an audio indication (a bell) when new alarms arrive.

8.2 Configuration Management and Maintenance

■ Master Profile for the following AudioCodes products:

- Mediant Media Gateway, IPmedia 2000 Media Server
- TP-1610 Board Master Profile (Mediant 5000, 8000 Media Gateways and Mediant 5000, 8000 Broadband Access Gateways)

■ Mediant 5000, 8000 Features

- Media Gateway Table view: In addition to the MG graphical view, users can select the MG Boards table view, enabling users to perform actions on a set of boards: Boards Lock / Unlock, Create / Apply Board Master profile.
- Maintenance Actions: The EMS supports maintenance actions ('Sw Upgrade', 'Reinstallation', 'Start Up' and 'Shut Down'). The software distribution process is performed via FTP and Telnet. The EMS server implements the FTP client. Mediant 5000 / 8000 Media Gateways have an FTP server.
- Alarm Card Status Screen: A new Alarm Card status screen can be accessed by double clicking the 'Alarm Card' icon. This status screen includes automatically updated information on all components of the monitored system hardware: Fans, Power Supplies, Temperature Sensors.

■ TP-6310 Board Management including Status, Navigation, Provisioning and Master Profile

- The EMS supports provisioning of all the TP-6310 board's components, including Board, Fiber Group and Trunk parameters, Signaling Profiles, all the Broadband SS7 Layer 3 components provisioning, SIGTRAN IUA, M2UA and M3UA provisioning, VoATM backbone connectivity and User plan provisioning.
- Using a TP-6310 master profile simplifies and expedites provisioning of Mediant 8000 system. After finishing configuring a TP-6310 board and verifying that it's operating flawlessly, operators can save the configuration as a master profile. The master profile comprises the following entity profiles:
 - ◆ Board Provisioning Frame
 - ◆ Trunks Provisioning Frame (for all 63 trunks)

- ◆ All the signaling profiles (SN Timers, SS7 Link Set Timers, MTP2 Profiles, SAAL Profiles, ALCAP Profiles for all defined entities)

After saving the configuration as a master profile, operators can attach it to the TP-6310 board or to multiple TP-6310 boards. The configuration data is in fact copied from the original board to the other boards. Only configuration data that can be copied is copied. The values of some parameters change from board to board, hence these parameters and their configurations cannot be copied. The Master Profile mechanism utilizes the EMS's profile mechanism that already exists at the frame level, expanding it in a very natural way.

■ Software Manager Additional Capabilities

Additional information has been added to the Software Manager. Filtering capabilities according to the Media Gateway type have been added.

8.3 Performance Management

After service is provisioned for a subscriber under a given QoS level, the service provider must ensure that the purchased level of service is delivered. In the domain of EMSs, this process involves high-level fault and performance management of the managed entities. This section describes the performance management functionality of the EMS.

The EMS's Performance Management is composed of real-time and historical data monitoring.

Real-time data monitoring can be used to troubleshoot network or system problems and to isolate a problem after it is detected by the fault management system.

Historical data can be used for long-term network analysis and planning.

8.4 Security Management

Users Management in the EMS Application

Management of users can be performed using one of two applications:

1. Centralized LDAP server (integration is supported by EMS application)
2. EMS application

User Security Extensions

An operator is assigned administrator security level to exert control over users' access to system resources so that sensitive system information cannot be accessed without appropriate authorization and managed system elements cannot be sabotaged. The Administrator can define new users, change user security level, update/modify user details, remove a user from the Users List, perform the forced logout of an active user and/or suspend a user (as well as release an operator from suspension). The status of each user can be viewed in the Users List screen: ACTIVE, NOT ACTIVE, SUSPENDED or AUTOMATICALLY SUSPENDED.

Actions Journal Extensions

The Actions Journal supports the following filters facilitating easy access to required information: User's Filter, Action Type Filter and the Date and Time Filter.

Changing Passwords Logic

Operators must change password once at the end of every predefined period of time (by default, every 90 days). Operators are not allowed to reuse their five previously used passwords. The password must include between 8-15 characters. The password must answer at least 3 out of 4 requirements: It must be combined of small and capital letters, digits and signs. The password must not be a repetition of the User Name.

Reader's Notes

9 Known Limitations and their Workaround

Table 9-1: Known Limitations and Their Workaround

Issue	Problem/Limitation Description	Comments and Workaround
First-time Login	<p>Important note for first-time users (this is not a problem but a reemphasis of an issue that first-time users will likely encounter):</p> <p>When logging in for the first time:</p> <ol style="list-style-type: none"> 1. Log in as user 'acladmin' with password 'pass_1234', or with 'pass_12345'. 2. From the main screen, open the 'Users List' (menu 'Security' > option 'Users List') and add new users according to your requirements. 	-
Number of MGs in one region	It's recommended to define no more than 500 media gateways in any one region in order to derive optimal system performance.	-
Working with MediaPack, Mediant 1000/2000/3000 via Satellite	A round trip IP network delay of up to 0.5 seconds is supported.	-
Software Version number update after Software Upgrade	Very rarely after Software Upgrade, or Online Software Upgrade, the EMS status screen is not updated with the new version number.	Press Region status on the EMS Tree panel, and then press MG again. The new version number will be updated.
Online Help	Online Help is not updated to the latest version, and therefore not fully functioning.	Will be fixed in one of the 5.6 Fix versions.



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