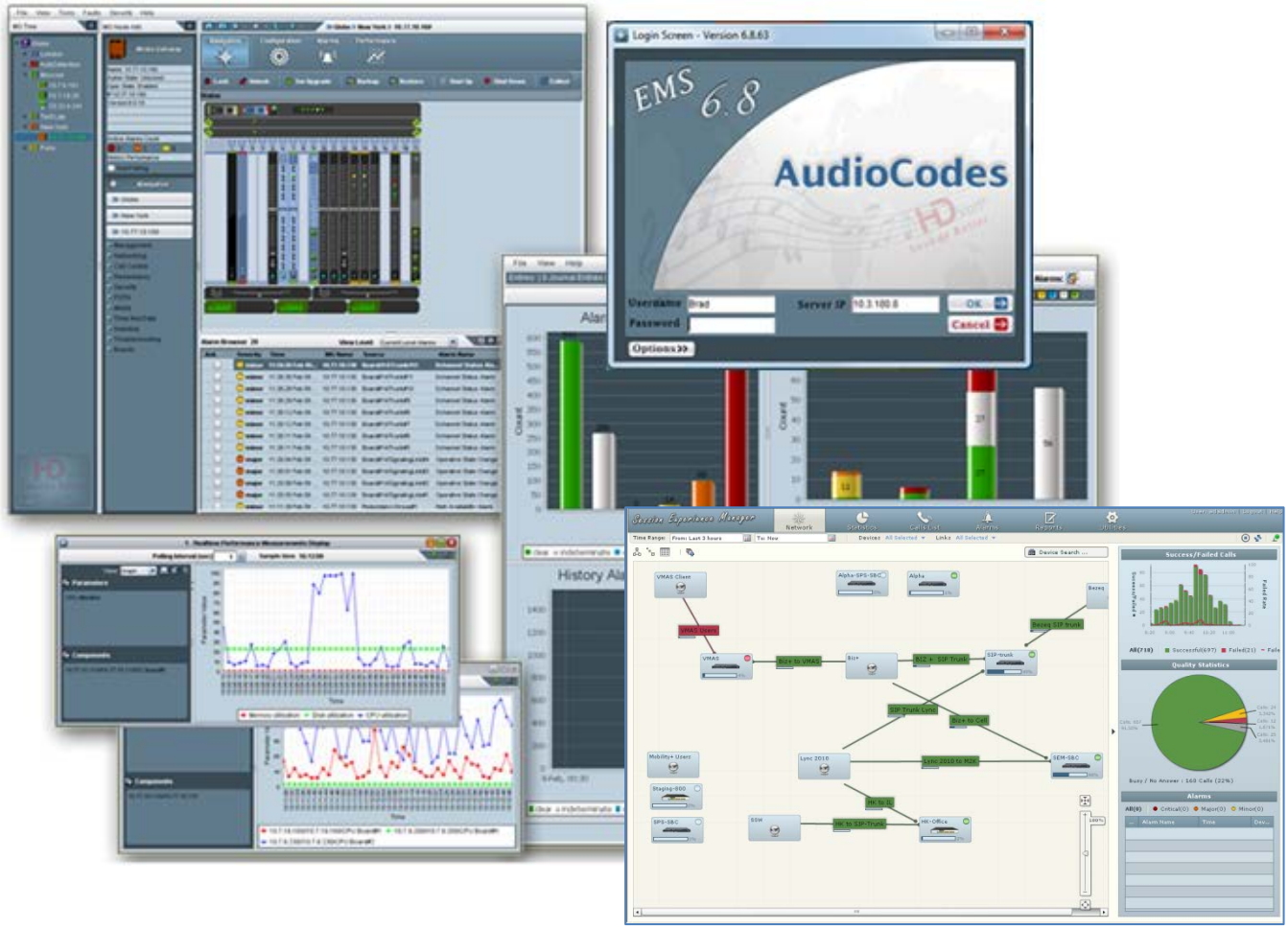
AudioCodes Element Management System (EMS) and
Session Experience Manager (SEM)

Release Notes

Version 6.8



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Related Documentation

Manual Name
Mediant 500 MSBR SIP User's Manual
Mediant 500 E-SBC SIP User's Manual
Mediant 600 and 1000 SIP User's Manual
Mediant 800B Gateway and E-SBC User's Manual
Mediant 800B MSBR SIP User's Manual
Mediant 1000B Gateway and E-SBC User's Manual
Mediant 1000B MSBR SIP User's Manual
Mediant 2000 User's Manual
Mediant 2600 E-SBC User's Manual
Mediant 3000 User's Manual
Mediant Software E-SBC User's Manual
Mediant 2000 SBA Quick Guide
Mediant 1000 SBA Quick Guide
Mediant 800 SBA Quick Guide
MediaPack User's Manual
Element Management System (EMS) Server Installation, Operation and Maintenance Manual
Element Management System (EMS) Product Description
Element Management System (EMS) OAMP Integration Guide
Element Management System (EMS) User's Manual
Element Management System (EMS) Online Help
Mediant 3000 TP-8410 OAM Guide
Mediant 3000 TP-6310 OAM Guide
Mediant 2000 OAM Guide
Mediant 1000 E-SBC OAM Guide
Mediant 1000 MSBG OAM Guide
Mediant 800 E-SBC OAM Guide
Mediant 800 MSBG OAM Guide
Mediant 600 OAM Guide

Document Revision Record

LTRT	Description
LTRT-90531	Initial document release for Version 7.0.
LTRT-90539	Removed support for the Mediant 5000 and Mediant 8000 products.

Documentation Feedback

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1 Managed VoIP Equipment

The following products (and product versions) can be managed by this EMS / SEM release (**bold** font indicates new products / versions):

- **Mediant 9000 SBC: version 6.8**
- Mediant 4000 SBC: versions **6.8**, 6.6
- Mediant 2600 E-SBC: versions **6.8**, 6.6
- **Mediant SE SBC: version 6.8**
- **Mediant SE-H SBC: version 6.8**
- **Mediant VE SBC: version 6.8**
- **Mediant VE-H SBC: version 6.8**
- Mediant 3000 Media Gateways: versions **6.8**, 6.6, 6.4
- Mediant 2000 Media Gateways: versions 6.6, 6.4
- *Mediant 1000 Gateway: versions 6.6 and 6.4
- Mediant 1000B Gateway and E-SBC and Mediant 1000B MSBR: versions **6.8**, 6.6, 6.4
- Mediant 800B Gateway and E-SBC and Mediant 800B MSBR: versions **6.8**, 6.6, 6.4
- *Mediant 600: versions 6.6, 6.4
- **Mediant 500 E-SBC**
- **Mediant 500L MSBR and Mediant 500 MSBR: versions 6.8**
- MediaPack 11x (MP-11x) Media Gateways: versions 6.6
- *Mediant 800 SBA, *Mediant 1000 SBA and *Mediant 2000 SBA devices with SBA version **1.1.13.0** and above and gateway versions 6.6 and **6.8**

Notes:

- ***** Refers to products that are not supported by the SEM.
- All version 6.8 VoIP equipment works with the SIP control protocol.
- For detailed information on supported gateways and protocols for version 6.6, see Section 3 on page 17.

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2 New Features in EMS Version 6.8

2.1 General

2.1.1 Improved/Enlarged Capacity of Managed Products

- EMS
  - Up to 5000 devices per installation.
  - Up to 500 devices per region.
- SEM – see Section 2.3 on page 13.

2.1.2 New Hardware Requirements

The new hardware platform for the EMS / SEM 6.8 version is defined as follows:

- HP DL360 G8 server with the following minimum requirements:
  - CPU: Intel Xeon E5-2690 (8 cores 2.9 GHz each)
  - Memory: 32 GB
  - Disk: 2 X 1.2 TB SAS 10K RPM in RAID 0

2.1.3 New Products Management

In this version, the following new products are supported by EMS and SEM:

- Mediant 9000 E-SBC: **6.8**
- Mediant 4000 E-SBC: versions 6.6, **6.8**
- Mediant 2600 E-SBC: versions 6.6, **6.8**
- **Mediant SE SBC: version 6.8**
- **Mediant SE-H SBC: version 6.8**
- **Mediant VE SBC: version 6.8**
- **Mediant VE-H SBC: version 6.8**
- Mediant 500L MSBR: version **6.8**
- ***Mediant 800 SBA, ***Mediant 1000 SBA and ***Mediant 2000 SBA devices with SBA version **1.1.13.0** and above and gateway versions 6.6 and **6.8**

* Refers to products that are not supported by the SEM

2.1.4 Virtualized EMS Server on HyperV

In this version the EMS server, is delivered as a virtual appliance on the HyperV Virtual Servers (in addition to previously released setups).

The virtual environment allows the IT manager, carriers and all EMS customers to minimize dedicated hardware per application usage, which leads to IT maintenance cost savings.

2.1.5 Supporting High Availability in Virtualized Solutions

On both the VMWare and HyperV servers, EMS can run as Standalone application or as part of a High Availability solution supported by a virtualization vendor.

For a list of all supported configurations, refer to the *EMS Server IOM Guide*.

2.1.6 EMS Client Support on Windows 8

In this version, the EMS client application is supported on the Windows 8 Operating System.

2.1.7 EMS Server: Server Manager Improvements

The EMS Server Manager user experience has been enhanced with new features such as color-coded statuses, improved menu design and navigation, as well as improved responses. These changes are described in the *EMS Server IOM* document.

2.2 EMS New Features

2.2.1 Security: Integration with LDAP Server for User Authentication and Authorization

EMS application users can now be authenticated and authorized using an LDAP server, in addition to the existing methods (local users on the EMS server) storage, RADIUS or TACACS+ server).

2.2.2 Devices Configuration Backup and Data Synchronization

Starting this version, device configuration is backed up in the EMS server as an *ini* file. EMS server updates the device *ini* file each time the device configuration is updated via EMS. In addition, periodic checks are performed to detect configuration changes on the device. As a consequence of these checks, a backup file is generated on the EMS server several times each day, based upon these most recent updates. Up to 10 backup files can be stored per device.

2.2.3 Performance Management Extensions

- A new option to print detailed summary reports has been added in the History PM Display.
- In the History PM Display, new parameters 'Min Value Time' and 'Max Value Time' have been added. These parameters display the time interval at which the minimum and maximal values occurred during the polling interval period.
- New History PM Configuration performance management metrics 'IP Group Statistics' can be defined per IP Group. For example, you can poll 'SIP IP Group Dialogs' and 'SIP IP Group Invite Dialogs IP Max'.

2.3 SEM New Features

2.3.1 Improvements in SEM Performance and Data Storage

The table below describes enhancements in SEM performance and data storage.

SEM Performance and Data Storage

Parameter	Capacity
Maximal number of CAPS per device.	160
Total maximal number of CAPS per server.	300
Maximal number of managed devices.	3000 devices
Maximal number of links between devices.	6000
Detailed information per Call (*)	Up to 1 month or 80 million calls.
Statistic information storage.	Up to 6 months or 150 million intervals.
Network, Statistics and Reports Views.	Improved Capacity Volumes.

Note the following:

- (*) Our recommendation for high capacity setups (100 CAPS and Higher) is to set the SEM parameter 'SEM Server Storage Level' to 'Failed, Poor or Fair Quality Calls, No Trends'.
- In this version, the Network, Statistics and Report Views enable the user to view up to six months of archived information (instead of the 10 million calls limitation in the previous version).

2.3.2 New SEM Licensing Mechanism

In this version, a new SEM Licensing mechanism has been implemented.

The Licensing mechanism applied by the customer is based on EMS/SEM server machine identifier, which can be extracted from the machine after it's installed.

After applying the new SEM license to the EMS/SEM server machine, SEM will work according to the license key definition. You no longer need to apply the QoE feature licenses at the device level.

2.3.3 Support New Link Types between Devices

The following links between devices are supported in this version:

- IP Group
- Media Realm
- Remote Media Subnet
- Trunk Group
- Phone/URI Prefix
- Control IP Address
- Media IP Address

Notes:

- In this release, support has been added for the Media Realm, Remote Media Subnet and the Media IP Address links. This extension is relevant for devices from version 6.8 and later.
- For the IP Group, Media Realm and Sub-Media Realm link types, different QoE calls threshold per each link may be configured (e.g. calls are colored red on MOS < 3.0).
- This configuration should be performed on the VoIP device using any of the supported management interfaces.

2.3.4 New Links Table in Network View

- Improved links table design allows the management of a larger number of links.
- Fast and Easy link search according to name, source or destination devices is supported.

A summary of the most important link statistics, such as Calls Number and Calls Success Rate, Quality, and the most important metrics with sorting options are supported.

2.3.5 SEM Application Multi - Tenancy

The EMS user permissions per region feature, introduced in the previous version to the EMS application, have now been extended to the SEM. Each operator will now be able to view/change only those devices and links defined in the region upon which they have access privileges. This includes the entire set of SEM pages: Network, Statistics, Calls, Alarms and Reports.

2.3.6 Scheduled Reports

You can now automate report generation using scheduling criteria. The following summarizes the scheduling criteria that you can define in the scheduled reports:

- Setting the type of report. For example, 'Call Statistics by Device' or 'Call Statistics by Link'.
- Setting further report type criteria; for example in the event of a Links report, you can define link filter settings. For example, generate a report for a specific IP Group or Media Realm.
- Set the scheduler to generate hourly, daily, weekly or monthly reports.
- Set the time of the day to run the report.
- Set the number of times to run the report.
- Send the reports to an email addresses or view a separate list of the generated reports for each specific report type. For example, view a list of generated reports for "Call Utilization by Device". You can generate reports for all existing SEM report types.

2.3.7 Calls List: Add Calling Name Information

When the device is integrated with the Active Directory server (when LDAP is enabled on the device) and manages the users list, the SEM will be able to display the user with their Calling Name as it appears in Active Directory definitions. This Calling Name will be displayed in the Calls List in the 'Caller' field, and in the 'Top Users' reports in the "User Name" field. In addition, users can sort, or search according to this Calling Name in the Calls List.

2.4 Changes from the Previous Version

- Installation Process: this version does not support an upgrade from any previous version for working with Oracle Enterprise Edition. Import of the managed devices should be performed using the latest version of the Topology file. Server machine format and clean install using three DVDs (DVD1, DVD2 and DVD3) is required. A minor version 6.8 upgrade is supported.
- EMS: The Master Profile is not supported in EMS version 6.8. The suggested method for replicating a configuration to multiple devices is by using an incremental INI file.
- SEM: The Calls List, Voice and Fax Calls buttons have been removed.
- SEM: The Calls List screen is not auto-refreshable. To initially retrieve the Calls List, set filter parameters, and then click the Refresh button each time to update the list.
- SEM: Statistics view: The Failed Calls Termination Reasons distribution has been removed.
- SEM: Links. When adding or modifying link it will affect only to the next calls.

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3 New Features in EMS Version 6.6

3.1 General

3.1.1 Virtualized EMS Server

In this version, the EMS server, in addition to the regular installation, is delivered as virtual appliance (VMware vSphere Hypervisor™ (ESXi) on the VMware Virtual servers. The following configurations are supported:

- Entry level
- Standard
- Large configuration

The difference between the above configurations relates to storage capacity.

The virtual environment allows the IT manager, carriers and all EMS customers to minimize dedicated hardware per application usage, and consequently lead to IT maintenance cost savings.

3.1.2 Syslog Server Running on the EMS Server

Syslog from all managed machines can now be logged directly to the EMS server without the need for a 3rd party Syslog server in the same local network.

The EMS Server Manager is used to enable this feature. In addition, the user should configure the device that they wish to monitor to send syslog messages toward the standard syslog port (UDP 514) on the EMS server machine.

The syslog log file 'syslog' is located in the following EMS server directory:

'/opt/ACEMS/NBIF/mgDebug/syslog'

The syslog file is automatically rotated once a week, where up to four files are stored. The oldest file is purged once a week.

3.1.3 Debug Recording Collection on the EMS Server

Debug recordings packets from all managed machines can now be logged directly to the EMS server without the need for a 3rd party network sniffer in the same local network.

The EMS server runs the Wireshark network sniffer, which listens on a particular configured port. The sniffer records the packets to a network capture file in the Debug Recording (DR) directory.

The EMS Server Manager is used to enable this feature. The user should configure the device to send its debug record messages to a specific port (UDP 925) on the EMS server IP.

The DR capture file is located in the following EMS server directory:

'/opt/ACEMS/NBIF/mgDebug/DebugRecording'

The file 'TPDebugRec<DATE>.cap' is saved for each session. The user is responsible for closing (stopping) each debug recording session. In any case, each session (file) is limited to 10MB or one hour of recording (the first rule which is met causes the file to close i.e. if the file reaches 10MB in less than an hour of recording, it is closed). A cleanup process is run daily, deleting capture files that are 5 days old.

The user is able to retrieve this file from the EMS server and open it locally on their own PC using Wireshark with the debug recording plug-in installed (Wireshark version 1.6.2 supports the Debug Recording plug-in).

3.2 Configuration, Management and Maintenance

3.2.1 PSTN – D Channel Switch Activity

The EMS now indicates D-Channel (DS0) status, which directly affects the overall Trunk (DS1) status. As a consequence, this version includes the following:

- The 'D-Channel Status' field has been added to the existing trunks table.
- The 'NFAS Group Status' status table has been added to the PSTN navigation folder. This table displays a summary for each NFAS group of the primary and secondary D channels trunks and each channels respective activity status. A new action 'Switch D-channel activity' is implemented per NFAS group.
- Trunk status color coding has been extended with a new color 'orange', which represents the NFAS Alarm.

3.2.2 PSTN - Reset B-Channel

A new user action enables you to reset the selected B-channel for each one of the trunks (DS1).

3.2.3 Mediant 1000 – New Module Support

A new module 'SWX' is now supported on Mediant 1000 devices. This module includes four Ethernet ports.

3.2.4 Extensions in Voice Quality Rules Provisioning

Extension in Voice Quality Rules enables monitoring of the remote side (Caller and Callee legs) metrics.

3.2.5 SIP Enhancements

This release includes various SIP enhancements (for more information, see the relevant *SIP Release Notes* document and the relevant *OAM Guides)*.

3.3 Security Management

3.3.1 EMS Users Permissions per Region

This feature enables you to set different user permissions for different regions. This feature has been implemented for Enterprise and Service provider environments that need to allow specific users to view only a subset of the sites, as well as to provide them with different security level per sites (regions).

In addition to the existing security levels– 'Super Admin', 'Admin', 'Operator' and 'Monitor', a new level – 'Not Visible' has been added. This level allows you to filter views for EMS users with 'Operator' and 'Monitor' privileges according to sites.

For example, an ITSP may have an EMS server installation that can manage multiple clients; where each client is assigned a separate region or alternatively a specific ITSP customer with global operations may wish to secure EMS information confidentially for each corporate region i.e. North West, North East and South.

You can configure regions when performing Add Region' or 'Add User' operations, or at any time using one of the following screens: 'Users List', 'Region Details' or 'User Details'.

3.4 SEM (Session Experience Manager) Features

3.4.1 Monitoring Links

A link is defined as the communication path between two devices. The purpose of the link is to measure and display the key metrics for all calls made on a specific link path. Links between these two devices can be defined according to one of the following criteria:

- IP Group
- Trunk Group
- Phone Number
- SIP IP address

The 'source' device (based upon which key metrics are monitored) must be an AudioCodes device. The second device can be either an AudioCodes or non-AudioCodes device that is defined by the user (see below). The user can define one or more links between each device.

Only links explicitly defined by the users are displayed in the Network Map view. Each device and link status is displayed as 'Red' or 'Green'.

The device/link is 'Red' if one or more of the following criteria are met:

- Failed Calls threshold is reached (default = 10%)
- Poor Calls Quality threshold is reached (default = 5%)

The user can define third-party non-AudioCodes devices on the Network Map view. These devices are not directly monitored by the SEM application; however, they assist the user to view all the relevant devices in the VoIP network and to monitor links with AudioCodes devices. The most commonly used non-AudioCodes devices are the Microsoft Lync Server 2010, an IP PBX, an ITSP or routers. For example, the SEM module can calculate the call quality for the link defined between the AudioCodes devices and Microsoft Lync Server 2010 devices to identify poor call quality patterns. Non-AudioCodes devices are defined by name and IP address.

3.4.2 Reports

The Report view has been added in version 6.6. It's divided into three rubrics which allow the user to focus on different aspects of the call analysis:

- **Network Status** – displays a summary analysis of key call metrics during a specified time period with a separate row entry for each device/link. The main purpose of these reports is to perform a high level comparison between various objects. For example, the 'Calls Statistics by Device' report summarizes for selected devices/links, the total percentage of successful and failed calls and metrics such as 'Number Of Calls' and 'Calls Quality'. Alternatively, the 'Call Quality per Device' report summarizes the key metrics affecting Voice Quality, such as 'Jitter', 'Delay' and 'Packet Loss'.
- **Trends** – displays the 'over time' behavior (monitored for a specific device/link over specified time intervals) where the same call metrics (described above) are displayed. For example, the 'Calls Trend by Device' report displays the 'Number of Calls', 'ASR' and 'Total Duration' in hourly intervals.
- **Top Users** – includes a list of users sorted according to one of the following metrics: 'Number Of Calls'; 'Calls Duration' and 'Users Who Experienced Most Poor Quality Calls' (based on specific metrics).

Below is a list of generic report features available for each one of the above reports:

- Filters: user can define the exact subset of objects relevant for the specific report (devices / links), the exact report time period and for trend reports, the time interval.
- Data graphical representation: by default, SEM displays on the graph, one of the report metrics (predefined in the SEM application). The user can show graphical representation for additional table columns as well as view graphs either vertically (one under another) or horizontally.
- Table view: add/remove columns. Each report shows the default number of columns (predefined by the SEM application). In most of the reports, there are lists of additional columns which are also available for display. The user can add or remove columns to each report.
- Table: footer line is represented in the bottom of the table and includes the summary of each one of the columns. For countable objects it includes the summary of all the rows, for average values it includes the average of all the rows, and corresponding minimum, maximum and percentage.
- Search: user can use 'Search' option to search for any string. When the requested string is found, it is marked in the report.
- Save as PDF: enable the user to create a PDF file including all the user current selections: filters, columns, graphs, etc.

3.4.3 Threshold Based Alerts

Threshold based alerts are an ideal network operator tool for automatic quality analysis. SEM alerts help to avoid false alarms when defining the appropriate minimal number of calls and criteria thresholds.

Threshold based alerts are generated as a result of the SEM application data analysis. Alerts are raised and cleared based upon user-defined policies and rules. The alerts are displayed in the 'Alarms' view as regular alarms.

Rules are provisioned according to the following:

- **Rule scope** – the object scope of the alert criteria. The user can select all the devices / links, or a specific device / link, or choose a set of the devices/links in each rule (default – all the objects: devices or links).
- **Rule frequency (min)** – how often the tool runs (default - 15 min).
- **Rule time window (min)** – the backlog time period that data is analyzed (default – 60 min).
- **Minimal Calls number for analysis (#)** – the minimum number of calls required for analysis; if the number of calls during the selected time period was lower than the provisioned number of calls, SEM does not perform the data analysis (default – 50 calls).
- **Alert criteria and its thresholds** – the key metrics that are measured during the analysis. The table below summarizes the supported criteria's and default threshold values.

#	Criteria	Critical Threshold	Major Threshold
1	Failed Calls %	5	3
2	Poor Quality Calls (Red Color) %	10	8
3	Average Call Duration (sec)	5	10

For example, given the following information:

- Scope = Device (default)
- Frequency = 15 min (default)
- Time window = 60 minutes
- Minimal Calls # = 50
- Criteria Definitions and thresholds table: default settings.

The 'SEM Quality Analysis' performs the following checks every 15 minutes,:

- Check the number of calls for each device in the past hour (60 min).
- For signaling links upon which the number of calls was greater than 50, the following statistics are collected and compared to the policy criteria and thresholds:
  - Percentage of failed / successful calls
  - Percentage of poor quality calls ('Red' calls)
  - Average call duration (sec)

3.4.4 New Call Types Support: Gateway

The following lists the supported call types in the current version:

- SBC and IP2IP calls: the call is composed of two legs (both of IP type)
- Gateway calls:
  - ISDN, CAS, Transparent calls; one of the legs is IP, and the second side is PSTN
  - FXO, FXS , EANDM calls; one of the legs is IP, and the second side is Analog
  - TEST calls; one of the legs is IP, and the second side is Test

3.4.5 Voice Quality Parameters Extensions

3.4.5.1 Call Color and Cause Parameter

The SEM module assigns one of the following color grades to represent each call leg and an overall quality of the call:

- 'Red' indicates 'poor' call quality
- 'Yellow' indicates 'fair' call quality
- 'Green' indicates 'good' call quality

The call quality rating is based on the calculations for the following metrics:

- MOS
- Jitter
- Packet Loss
- Delay
- Echo

These metrics are monitored at the following call legs:

- Caller side device
- Caller side end-user
- Callee side device
- Callee side end-user

At the end of each call, the call quality assessment is reached based on the worst voice quality that is measured at one of the call legs.

After the problematic call leg is identified, the specific monitored parameter which caused the call quality degradation is traced and identified as a Cause.

Details of the call quality assessment are displayed in the Calls view (see Section "Calls and Call Details View Updates" below).

3.4.5.2 Calls and Call Details View Updates

The Calls table indicates the color rating of the call in the 'Call Quality' column, the 'Cause' column specifies the name of the monitored parameter that caused the degradation in call quality, and the 'Caller' and 'Callee' columns indicate the relevant associated user.

In the Call Details screen, the specific monitored parameter which caused the call quality degradation is displayed in 'Red or 'Yellow' (see explanation above).

The Call Details screen 'Trend' tab includes trend graphs displaying all four monitored call legs (described above) as well as all monitored metrics. All monitored call legs and metrics are updated on-the-fly during the call.

3.4.6 Context Linking Network and Statistics Views to Calls View

The Network and Statistics views graphs now include context links to the Calls view.

For example, in the Network view, when the user clicks on the 'red' segment of the 'Quality Statistics' pie-chart, the list of the poor quality calls is displayed in the Calls view. Alternatively, in the Statistics view, when the user clicks on the failed calls segment (for a specific time frame) in the 'Success/Failed Calls' bar chart, the list of failed calls for the corresponding time frame is displayed in the Calls view.

3.4.7 Calls List Filters

The Calls view includes the following new filters for rapid and focused search:

- Call Status filter: Success / Failed calls
- Quality Filters: Poor / Fair / Good / Unknown
- Cause: MOS / Jitter / Packet loss / Delay / Echo
- Monitoring Endpoint Type: SBC, IP2IP, FXS, FXO, etc.
- Exact Termination Reasons type

The user can enable one or more filters simultaneously.

3.4.8 Network Views

The following network tree views are now supported:

- **Table View** (the default) – displays a list of all the monitored devices (or links) with a summary of the most important metrics.
- **Map view** – displays a map of devices and links with color coded status summary.
- **Regions View** – displays a list of devices according to the regions.

4 Known Limitations and Workarounds

The table below lists the Known Limitations and Workarounds in this release.

Known Limitations and Workarounds

Issue	Problem/Limitation	Comments and Workaround
First-time login	Important note for first-time users (this is not a problem; however first-time users may encounter the following): **When logging in for the first time**: 1. Login 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	For optimal system performance, do not define more than 500 Media Gateways in any one region.	-
Online Help	The Online Help is not available in this version.	It will be available in one of the future fixes.
EMS Server – Virtual Platform	The Multiple Ethernet redundancy and EMS server HA features is not supported in this version for Virtualized server.	It will be supported in one of the future fixes.
Installation process: Upgrade from previous version is not supported.	Installation Process: this version does not support an upgrade from any previous version for working with Oracle Enterprise Edition. Import of the managed devices should be performed using the latest version of the Topology file. Server machine format and clean install using three DVDs (DVD1, DVD2 and DVD3) is required. A Special procedure to configure Server BIOS is required; please contact ACL for special instructions. A minor version 6.8 upgrade is supported.	The clean install procedure will be released in the next 6.8 fix version.

AudioCodes Element Management System (EMS) and
Session Experience Manager (SEM)

Release Notes

AudioCodes

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