Oracle Enterprise Operations Monitor

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For enterprise IT managers who need to rapidly troubleshoot communications network outages and service degradations, the Oracle Enterprise Operations Monitor enables rapid problem detection, isolation and resolution using unique end-to-end session correlation and real-time analysis capabilities.

KEY FEATURES

- Real-time, passive VoIP and UC network monitoring
- End-to-end call correlation and analysis
- Fast and accurate problem localization
- Media quality analysis, including R-Factor and MOS scores
- Drill down to view messages per user session, including live calls
- Vendor agnostic visibility into SIP, RTP, RTCP and other protocols
- Unparalleled insight into and analysis of signaling messages
- Embedded software probes eliminate need for special monitoring equipment

KEY BENEFITS

- Reduces mean time to repair (MTTR) and associated operations costs
- Accelerates resolution of complex service provider and UC vendor problems
- Fast IT staff proficiency without training
- Monitors VoIP and UC networks from any vendor
- Rapid deployment without bulk provisioning

Overview

Oracle Enterprise Operations Monitor is a service monitoring, troubleshooting and analysis solution that provides unprecedented, real-time insight into enterprise Voice over IP (VoIP) and Unified Communications (UC) networks. It enables enterprises to reduce operational costs, increase user satisfaction and accelerate the deployment of communications services.

Enterprise IT managers frequently face problems with communications services that are difficult to detect, isolate and resolve. The resulting lengthy mean-time-to-repair intervals can cause user dissatisfaction, lost productivity and damage to brand image.

Oracle Enterprise Operations Monitor (EOM) is specifically designed to help IT staff identify problems anywhere in complex multivendor communications networks and rapidly resolve them. It is composed of passive probes that monitor and analyze network traffic, plus a Mediation Engine that correlates the data and creates a comprehensive end-to-end view of each session in real time.

It also helps IT managers troubleshoot call quality issues in real time with deep drill-down capabilities for both media and signaling – a true differentiator in the market.

Rapid Problem Detection and Isolation

By their nature, problems in IP communications networks can be difficult to detect. They can occur intermittently anywhere along the call path and may affect signaling and/or media portions of a session. The user impact can range from a minor impairment to a complete service failure. Users may not always report the problem and, once they do, it may already affect a large population.

EOM detects problems in real-time across a multivendor UC or contact center network and issues alerts to IT staff so they can be pro-active. It uses probes to monitor and analyze VoIP and UC communications protocols. Based on collected data, EOM calculates over 200 key performance indicators (KPIs) that detect a wide range of problems and provide early visibility into degrading service levels.

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EOM provides a granular leg-by-leg view of signaling and media for each session, including sessions in progress. Easy-to-read ladder diagrams enable IT staff to visualize and rapidly isolate problems to a network segment, network element or service provider interface.

Powerful and Intuitive User Interface

The EOM graphical user interface is so intuitive that most IT staff can become productive in minutes, without any training. It displays data in a powerful hierarchy that facilitates rapid drill down, problem isolation and resolution. Color-coded ladder diagrams and MOS graphs help to quickly identify problems.

EOM automatically correlates data from multiple VoIP/UC messages received from multiple probes to provide a comprehensive view of each session, including sessions spanning multiple protocols. The data is cached by the Mediation Engine, enabling IT staff to look backwards in time to identify the cause of an alert.

Users can instantly access all data related to any call – identification of caller/callee, their IP addresses, SIP messages and registrations, time stamps, call status – and visualize it, per segment, in a ladder diagram. The diagrams and reports can be exported into interactive HTML and PDF files that can be shared with third-parties to help facilitate problem resolution.
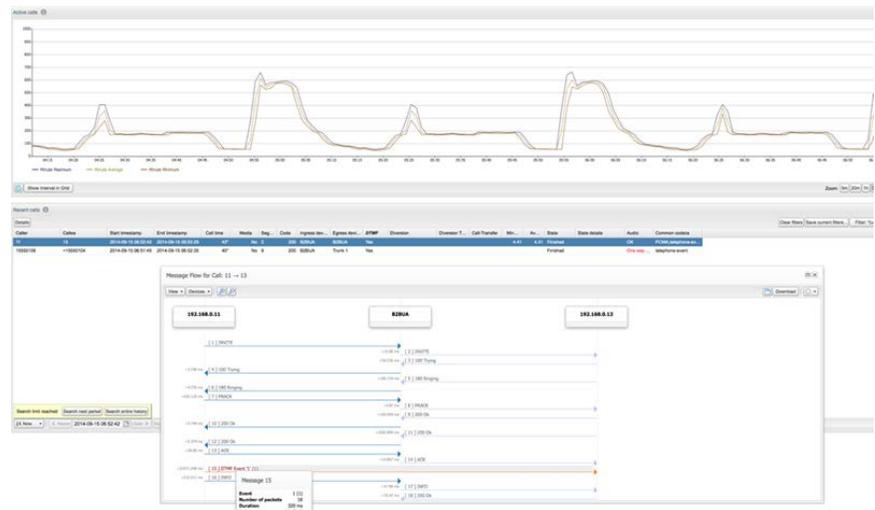

Figure 1: Ladder diagrams enable IT staff to quickly visualize and isolate problems

Users can define alerts based on a wide range of signaling events or media quality measurements and automatically create a trace for the traffic leading up to the alarm condition. Alert conditions can generate an SNMP trap or notify staff via email that includes the trace.

The dashboard features display panels that can be customized by each user to provide at-a-glance visibility to their most important metrics. EOM can monitor aggregate network activity, such as active calls and registered users, and performance for specific network elements, trunk interfaces and endpoint devices.

True, Real Time Media Analysis

Media quality problems can be introduced at any point along the call path, making them difficult to isolate and resolve. In addition, user complaints about call quality can be subjective and difficult to interpret. EOM features real time media monitoring and analysis tools that enable IT staff to rapidly isolate and resolve a range of problems, such as one-way audio and codec mismatches.

EOM combines RTCP data provided by end-points with media quality measurements collected by network probes to produce a detailed media analysis, including MOS scores. Probes enable problem localization by providing an empirical analysis at 10 second intervals for specific network segments. A color coded display enables staff to quickly identify poor media quality and drill-down from trunks to sessions. Packet loss rate, jitter and other detailed data can be analyzed per session.

EOM can record selected user sessions, enabling IT staff to listen to the same audio heard by the user and more rapidly debug problems. EOM also features DTMF and T.38 fax detection for visibility into IVR interactions and fax transmissions.

Highly Scalable Architecture

A flexible modular architecture makes EOM highly efficient, cost-effective to deploy and easily scalable from a mid-sized single data center environment to a very large geographically distributed enterprise.

Probes collect and forward signaling information to a central Mediation Engine for correlation and analysis while media flows for each session are analyzed locally. Metadata is forwarded to the Mediation Engine to optimize bandwidth efficiency and scalability.

Probes are embedded in Oracle Enterprise Session Border Controllers and Enterprise Communications Broker for visibility into critical trunk connections. E-SBC probes provide visibility into media quality on encrypted sessions, too. All EOM licenses include probe software that can be deployed on standalone x86 servers, providing flexibility to monitor additional network segments.

In geographically distributed networks, multiple Mediation Engines may be deployed to monitor the probes within each region. An optional Mediation Engine Connector provides a global dashboard through the same intuitive user interface.
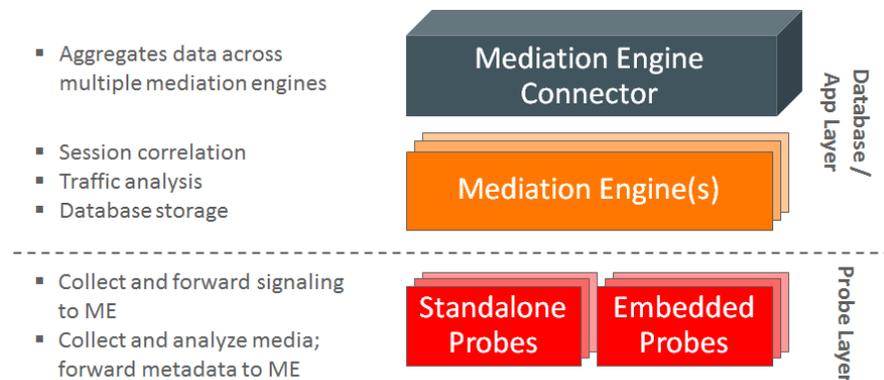

Figure 2: Highly scalable and flexible architecture enables EOM to deliver efficient monitoring coverage for any size enterprise

Features

ENTERPRISE OPERATIONS MONITOR FEATURES

Feature	Description
Multiple Site and Multiple Protocol Call Correlation	Calls are correlated and analyzed across multiple network sites and protocols providing full, end-to-end visibility into the network. Users can filter and analyze data for a single call – identifying the caller and call recipient, their IP addresses, number of call segments, call flow diagram, call status, and all detailed call information – as it traverses the entire network.
Key Performance Indicator Analysis	Over 200 KPIs monitor service accessibility, retention, and integrity. KPIs can be aggregated by service, site, and user. All KPIs can be accessed in real time by a Simple Network Management Protocol (SNMP) manager and an optional REST API.
Session Tracing	Real-time and historical call and transaction tracing facilities, with drill-down to ladder diagrams showing signaling transactions and media flows for each call across the entire network. Each leg of the call can be viewed and analyzed.
Network Alerts	A highly flexible alert function can notify IT staff when specific KPI thresholds are crossed, including poor MOS quality or slow signaling responses. Arithmetic operators can generate alerts by comparing multiple metrics. Alerts can be exported to network management systems with SNMP traps.
Call Logs	Active and completed calls transiting any part of the monitored network are logged and a filter capability can identify problematic calls for further analysis. The log enables IT staff to easily browse the network.
Packet Decoding and Filtering	Decodes the full protocol exchange between each network element in a session for a complete packet-by-packet view that enables better troubleshooting and problem isolation. EOM provides overall packet loss and the frequency of packet losses (burst packet loss) so IT staff can better understand the impact on voice and video quality.
In-Depth, Root Cause Analysis	Enables users to drill down from the network level to the signaling level and localize problems to an element, customer, device type or end user. Bidirectional data capture enables IT staff to quickly pinpoint the network segment where a message has not been sent and which party was affected.
Live User Search	Live and historical user sessions can be searched using partial phone numbers or IP addresses. Search results present a list of all users associated with an IP address, their SIP URIs and a list of sessions, including those in progress. IT staff can drill down on any displayed element to access signaling information and call detail records.
Reports and Exports	A range of reports and file exports facilitate troubleshooting with third parties, such as service providers, UC vendors and other enterprise departments. Flexible call reports can be created in PDF format that include the full details of protocol messages, ladder diagrams, media quality measurements and more. Selected traces can be exported in packet capture (PCAP) format. Optionally, EOM can generate call detail records and media detail records in CSV format for use with third party systems and bulk reports can be exported in file archive format.
High Availability	1:1, active/active Mediation Engine configuration support with probe sharing

Specifications

Feature	Description
Protocols	SIP, RTP, SRTP, RTCP, RTCP-XR, H.248/MEGACO, ENUM, MGCP. IPv4 transport is supported for all protocols and IPv6 is supported for SIP and RTP.
Probes	Passive probes are embedded in Oracle E-SBCs and Enterprise Communications Broker. Standalone passive probe software may be installed in any Intel 64-bit x86 compatible server.
Probe-to-ME communications	IETF IPFIX. All communications between probe and Media Engine can be encrypted.
External interfaces	SMTP email client, SNMP v2C client, RADIUS authentication client

Optional Extensions

Feature	Description
Mediation Engine Connector	Aggregates the data collected by the mediation engines and provides a global dashboard and KPIs. Designed for large, geographically distributed enterprises that need to deploy Mediation Engines in multiple locations, it provides global search and drill-down features while retaining the ability to drill down and troubleshoot specific problems.
App Support	Adds support for Python reporting applications and enables enterprises to modify and extend the EOM web user interface.
REST Remote API	An open interface enabling third-party applications to access EOM real-time and historical data, including raw and aggregated data such as calls, registrations, KPIs, and user experience information.
CDR Generation	Generates call detail records for successful and failed calls, based on EOM's end-to-end call correlation.
Gateway Control Protocol	Adds support for gateway control protocols, including H.248, and Media Gateway Control Protocol (MGCP).
ENUM Protocol	Adds support for the ENUM protocol