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Oracle Communications Operations Monitor

As an end-to-end network monitoring and troubleshooting solution, Oracle Communications Operations Monitor provides operations teams with real-time call correlation across multiple network sites, protocols, devices, and unified communications services, along with root cause analysis with visual call-flow analysis, supporting flexible deployment options across on-premises, virtualized, and cloud environments.

Overview

Oracle Communications Operations Monitor is part of the Oracle Communications Session Monitor product family, an end-to-end network visibility and monitoring software system that can help support operational efficiency across Long-Term Evolution (LTE), IP Multimedia Subsystem (IMS), voice over IP (VoIP), and unified communications as a service (UCaaS) deployment. Oracle Communications Session Monitor products help enterprises and service providers improve operational visibility, streamline issue investigation, and support service quality across IP communications networks.

Oracle Communications Session Monitor products capture signaling messages from monitored network environments using network probes connected to a correlation engine and present the results through a web-based GUI. Network probes are available as Oracle Communications Session Monitor probes that run on commercial-off-the-shelf (COTS) hardware and as software components that are integrated into Oracle Communications Session Border Controller's session delivery platforms. Oracle Communications Session Monitor products are a passive, nonintrusive solution designed to support diverse network architectures.

Oracle Communications Operations Monitor provides end-to-end call correlation in real time across multiple network sites, protocols, devices, and unified communications services. It provides visibility into calls, registrations, key performance indicators (KPIs), equipment details, user groups, and trunk information to support operations and troubleshooting. It provides drill-down capabilities for call flow analysis, protocol and device details, packet-level information, and registration activity. Oracle Communications Operations Monitor supports flexible deployment options across on-premises, virtual machines, and cloud.

Major advantages

Oracle Communications Operations Monitor offers many advantages to service providers. For example, it:

- **Supports efficient issue identification and resolution.** Oracle Communications Operations Monitor provides end-to-end visibility across calls, devices, protocols, and network elements, helping operations teams investigate issues and support resolution workflows.
- **Supports service monitoring.** Provides real-time and historical insights into network activity, user behavior, registrations, and service performance, supporting service monitoring and operational awareness.
- **Supports operational efficiency.** Automates data collection and correlation activities, helping reduce manual monitoring and investigation effort while supporting more efficient operations.
- **Simplifies deployment and administration.** Helps reduce the need for manual provisioning by automatically gathering user information and importing supported Oracle Communications Session Border Controller configuration data, helping streamline deployment workflows.

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- **Supports multi-vendor environments.** Oracle Communications Session Monitor products are designed to operate across diverse IP communications environments and support interoperability with a broad range of network components and infrastructure vendors.
- **Supports flexible deployment across diverse environments.** Oracle Communications Operations Monitor supports deployment in on-premises, virtualized, and cloud environments, including Oracle Cloud Infrastructure (OCI), Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP). Communication between probes and the Mediation Engine supports TLS, while probe-initiated connections support deployment scenarios that include NAT and firewall environments.

Monitoring and analysis features

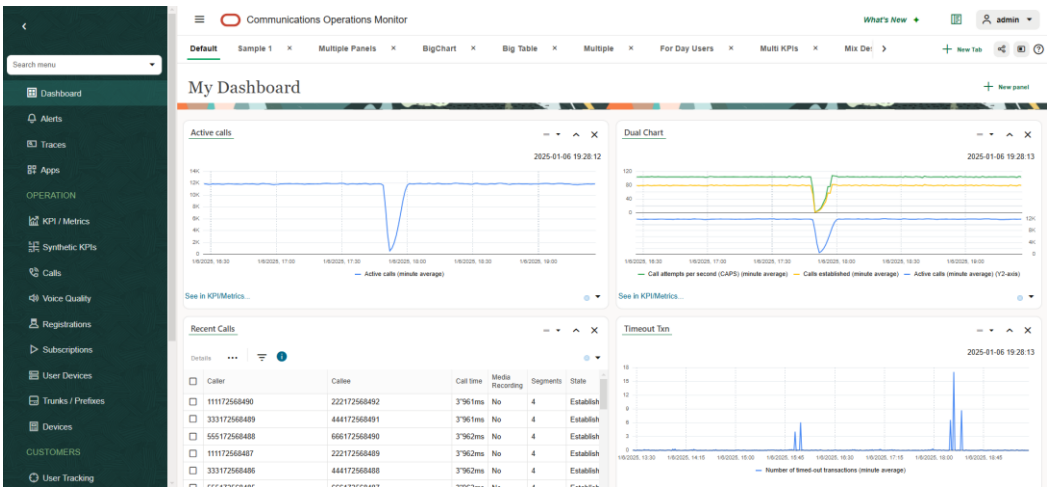
Multiple site and network protocol call correlation

Calls can be correlated and analyzed across multiple network sites and protocols (such as Session Initiation Protocol (SIP), H.248, Diameter, ENUM, SIGTRAN, or HTTPS depending on licensed features) and devices, providing end-to-end visibility into call activity across the monitored environment. Network operators can track back data for a single call—identifying the caller and call recipient, their IP addresses, the number of call segments, the call flow diagram, the call status, and associated call information to enable real-time monitoring and troubleshooting.

KPI analysis

Oracle Communications Operations Monitor includes a broad set of KPIs for voice network monitoring, addressing service accessibility, retainability, and integrity that can be aggregated by service, site, and customer. KPIs can be accessed in real time through the Oracle Communications Session Monitor products web interface, Simple Network Management Protocol (SNMP), and optionally a REST-based API.

Figure 1. KPIs can be measured and monitored in real time through a customizable GUI.



Network tracing

Oracle Communications Operations Monitor provides both real-time and historical call and transaction tracing, including sequence diagrams for signaling transactions and media sessions (with the Media Quality extension). Each step of the call can be viewed and analyzed to support troubleshooting.

Network alerts

Alerts for conditions such as voice quality degradation or slow responses can be established with configurable network and service KPI alert thresholds, and the alerts can be viewed through a configurable dashboard. Dashboard graphs can include transit and response times, the number of registered users, the number of error calls, and so on. Alerts can be exported to network management systems with SNMP traps.

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Call logs

Oracle Communications Operations Monitor provides a list of active and completed calls across the monitored environment, along with filter capabilities to identify calls that may require further investigation. This exploratory approach enables operations staff to browse the network at the application level.

Presence events monitoring

Oracle Communications Operations Monitor allows monitoring of presence events (subscribe, notify and publish), providing additional visibility that can help identify and troubleshoot network issues. Presence events are an important component of signaling activity in many communications networks. Monitoring these events can provide visibility into network behavior and help identify potential congestion conditions.

UCaaS Monitoring (Microsoft Teams Direct Routing calls)

Oracle Communications Operations Monitor supports end-to-end monitoring of Microsoft Teams Direct Routing calls through integration with Microsoft Graph APIs, which provide call data from Microsoft Teams environments. This information is then correlated with the session border controller (SBC) leg of the call to provide end-to-end visibility into Direct Routing calls. The resulting view expands the information available to users and supports troubleshooting and operational analysis.

STIR/SHAKEN Monitoring

The STIR/SHAKEN framework, an industry-standard caller ID authentication technology, is a set of technical standards and protocols that allow for the authentication and verification of caller ID information for calls carried over Internet Protocol (IP) networks. Communications service providers (CSPs) are implementing STIR/SHAKEN for call signing and verification for applicable calls that enter or leave their network.

Oracle Communications Operations Monitor's STIR/SHAKEN monitoring feature enables operations teams to monitor STIR/SHAKEN transactions between the SBC and both Secure Telephone Identity - Authentication Service (STI-AS) and Secure Telephone Identity - Verification Service (STI-VS). This provides visibility into call signing status and supports troubleshooting of potential call-signing issues. Reporting capabilities and KPIs provide real-time visibility into call-signing activity across SBC network elements.

Troubleshooting features

IP decoding and filtering

This feature enables network operators to see a packet-by-packet view. Captured IP packet exchanges between network elements can be analyzed to support troubleshooting and voice and video issue analysis. In addition to overall packet loss for a call, burst packet loss measurements are also available, providing additional insight into factors that may affect voice and video quality.

Media recording

Oracle Communications Operations Monitor can be used, where enabled and permitted, to record selected media for later quality analysis. Recorded media can be reviewed together with associated codec and media-type information for the call. Supported recordings may include audio, video, text, image, messages, and even T.38 fax transmissions.

In-depth, root-cause analysis

Oracle Communications Operations Monitor enables users to drill down from network-level views to analyze potential root causes at the element, customer, device type, and end-user levels. Bidirectional data capture provides visibility into signaling activity across the network, helping operators determine where signaling behavior did not occur as expected and whether the issue is associated with the originating or terminating side of the call.

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Automated alias detection

Different aliases are aligned automatically for a customer, based on end-to-end call correlation and topology. Manual adjustment is also possible. This is especially important for large network topologies in which different numbering and addressing schemes implement complex routing decisions.

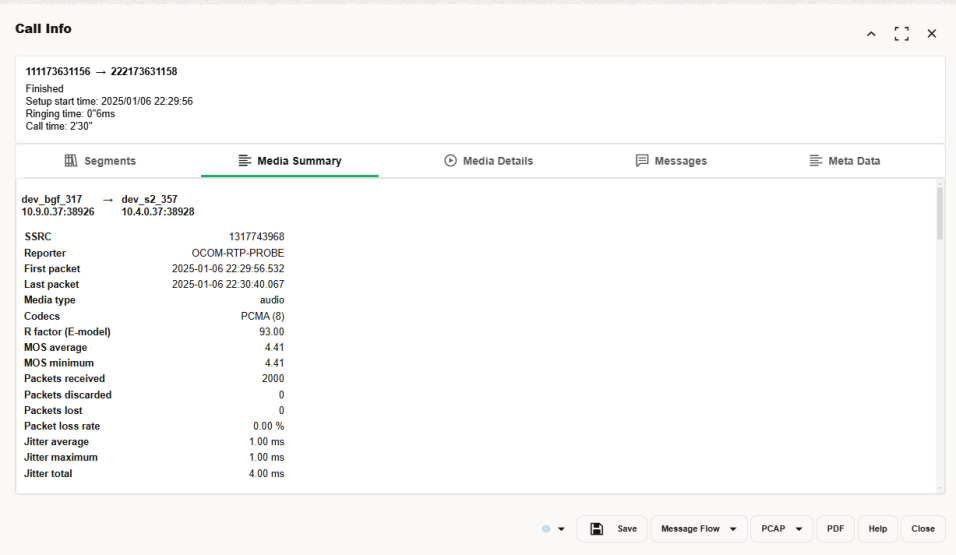
Live user search

Live User Search enables operators to locate user records and review associated registrations, call history, and activity information. Deep-link integration with third-party applications, such as call center and network management solutions, allows Oracle Communications Session Monitor products to open with the relevant user record already selected. This provides access to current and historical user information to support troubleshooting and operational analysis.

Call drill-down

Oracle Communications Operations Monitor enables drill-down to the signaling level and to voice parameters (it requires the Media Quality extension). It provides end-to-end visibility into call and media session information and supports root-cause analysis of a signaling or media issues. Protocol message details can be viewed within the application and exported in packet capture (PCAP) format to support collaboration with vendors and other operational teams. Oracle Communications Operations Monitor can be used in conjunction with existing tracing and troubleshooting tools and scripts, including widely used open-source tools such as Wireshark.

Figure 2. Network operators can analyze call message flows to support voice quality issue investigation.



Ease-of-use and interoperability features

Simple and intuitive GUI

The user interface is designed to be intuitive and support common operational workflows for both new and experienced users. It presents important information clearly and provides streamlined navigation to in-depth details. The interface is designed to support a broad range of operational roles through a consistent and intuitive user experience. Each Oracle Communications Operations Monitor user can be assigned specific permissions and given visibility to specific segments of network traffic. This provides role-based visibility into network information that is appropriate for each user's responsibilities. Each user also gets to define their own dashboard by selecting the widgets they want to see. As a web-based solution, it can help reduce client-side infrastructure and maintenance requirements.

Open operation and business support systems (OSS/BSS) interfaces

Oracle Communications Operations Monitor can be integrated with third-party umbrella management systems and other OSS/BSS solutions via the standard SNMP interface or the optional REST Remote API extension for

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Oracle Communications Operations Monitor for additional integration scenarios, such as traces, calls, registrations, KPIs, and user activity and service information.

Call detail record (CDR) generation

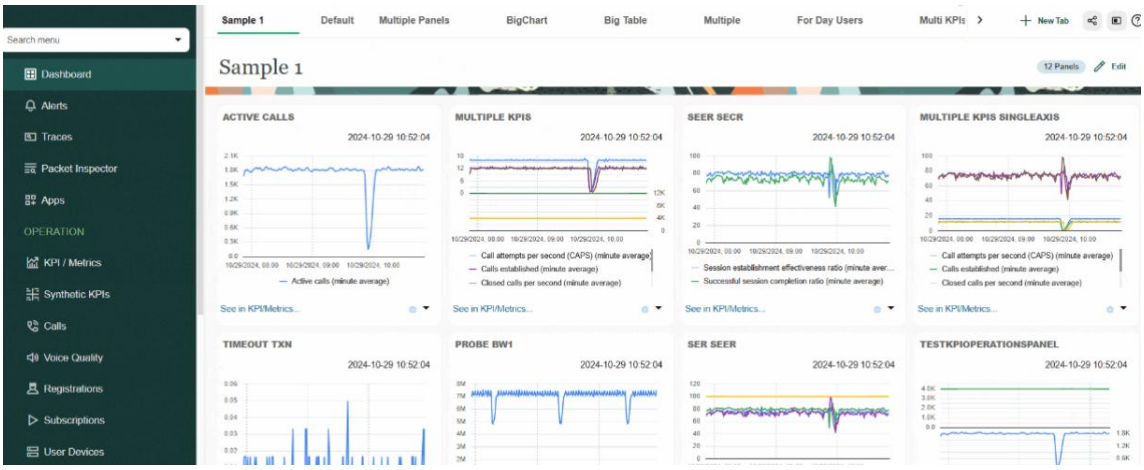
The optional CDR Generation feature of Oracle Communications Operations Monitor provides end-to-end call detail records for processing by third-party systems or for statistical analysis. These CDRs contain additional information detailing network segments the call has traversed and voice quality information. Through Oracle Communications Session Monitor products' call-correlation capabilities, CDRs can support business intelligence and reporting use cases.

Dashboards

Oracle Communications Operations Monitor comes with a dashboarding tool for producing a range of charts and graphs to display, track, and record traffic data. It also provides a data export facility for offline reporting tools, enabling raw data to be exported into PCAP, comma-separated values (CSV), and PDFs.

Reporting information can be made available through the optional REST API for automated machine processing.

Figure 3. Oracle Communications Operations Monitor includes a dashboarding tool for producing a range of charts for displaying, tracking, and recording traffic.



Additionally, call data content and incidents can be exported in CSV format for post-processing in desktop applications. Internal tagging of customer experience information can help facilitate internal communications across departments accessing Oracle Communications Operations Monitor dashboards.

Service dashboards

Color-coded dashboards can help users identify potential issues. Statistics on recent calls can include:

- Successes versus failures
- Voice quality information (requires the Media Quality extension)
- Call history with detail information
- Drill-down into protocol details for recent calls

User equipment dashboards

The end device details for each user include:

- Recently used devices
- Brand, type, and firmware information
- IP address information
- Network address translation (NAT) information
- Recent working and failed registrations
- Concurrent device usage

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Statistics dashboards

The statistics and KPIs provided for a single subscriber include:

- Distribution of calls by destination
- Call success rate
- Average call length
- Average number of calls per day
- Ratio of incoming versus outgoing calls
- Average mean opinion score (MOS) value
- Count of Microsoft Teams Direct Routing calls at any point in time
- Count of calls not signed for STIR/SHAKEN

Statistical information can support analysis of customer behavior and service quality trends. For service providers, these statistics also support service planning and packaging decisions based on usage patterns.

Add-on extensions

Organizations can extend Oracle Communications Operations Monitor through optional add-on extensions that provide additional functionality. The following extensions support deployment-specific requirements and use cases:

- The Mediation Engine Connector extension simplifies the management of multiple Mediation Engine monitoring nodes and extends the use of Oracle Communications Operations Monitor across multiple locations. It provides an overview of the data collected by the mediation engines, offering a global dashboard. The global search and drill-down features of the Mediation Engine Connector enable network operators to scale the troubleshooting features of Oracle Communications Operations Monitor across multiple sites. Operations personnel can gain visibility into the status of distributed network environments while retaining the ability to drill down into detailed information for troubleshooting.
- The Media Quality extension enables the retrieval and processing of media quality information from Real-time Transport Protocol (RTP) traffic and from reporting customer premises equipment.
- The App Support extension adds support for customer-specific applications and provides additional functionality that integrates into the web application. It enables customers to develop custom functionality to address deployment-specific requirements and use cases.
- The REST Remote API extension provides an open interface to Oracle Communications Session Monitor products, so third-party applications can access real-time and historical data. The monitored data—including raw and aggregated information such as traces, calls, registrations, KPIs, and user activity information—can be made available to authorized third-party systems.
- The CDR Generation extension generates CDRs for successful and failed calls, based on Oracle Communications Operations Monitor's end-to-end call correlation.
- The SS7/SIGTRAN Protocol extension extends the set of supported signaling protocols with M2UA, M2PA, M3UA, and ISUP, in the context of SIP/ISUP calls and registrations.
- The Gateway Control Protocol extension extends the set of supported signaling protocols with the relevant gateway control protocols, H.248, and Media Gateway Control Protocol (MGCP). Gateway control protocols are frequently used in IMS/LTE and heterogeneous networks.
- The Diameter Protocol extension provides Diameter protocol support, including correlation with call signaling protocols. Diameter is widely used in IMS/LTE networks, and this feature supports the IMS Cx interface with the Home Subscriber Server (HSS).
- The ENUM Protocol extension enables support for the processing of ENUM messages.
- The UCaaS Monitoring extension enables configuration of Operations Monitor to connect to Microsoft Teams Admin Center to gather call details for Teams Direct Routing calls and correlate them with the Session Border Controller call leg.
- The STIR SHAKEN monitoring extension supports monitoring STIR SHAKEN calls by capturing HTTPS traffic and correlating it with SIP traffic for end-to-end call visibility and troubleshooting.

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Why Oracle Communications Operations Monitor?

Modern software architecture. A software-based solution designed to run on supported standard server infrastructure, virtual machines, and cloud environments.

Intuitive. Designed to reduce the need for extensive protocol expertise for common operational workflows.

Operational efficiency. Helps streamline data collection, setup, and issue investigation workflows.

Extensible and open. Plug-in interface for Apps and a REST API to support integration and extension use cases; direct integration to Oracle network products technology.

Real-Time. Provides sub-second visualization and analysis of live calls without relying on CDR aggregation.

Comprehensive. Provides a broad set of communications monitoring and troubleshooting capabilities.

Related products

- Oracle Enterprise Operations Monitor
- Oracle Session Delivery Management Cloud

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