



# **Best Practices from Deployments of Oracle Enterprise Operations Monitor**

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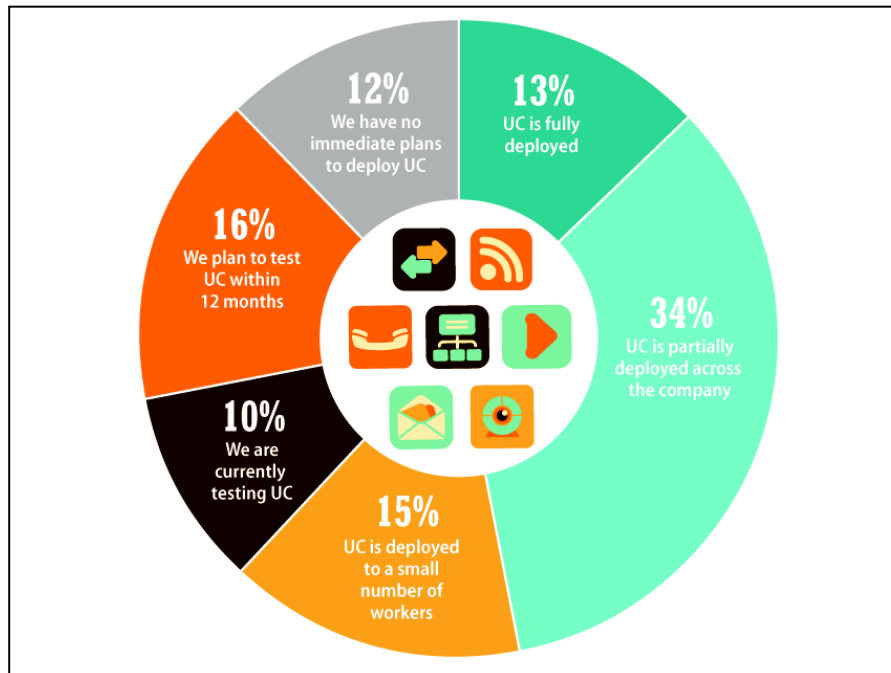
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## Introduction: The Challenges of Managing Unified Communications

Unified communications (UC) has been a market in the making for well over a decade. The power and benefits of UC should make it one of the most important IT initiatives for any business committed to operational excellence and competitive differentiation. However, Exhibit 1 shows that although many organizations have embarked on a UC strategy, few organizations have actually finished their UC deployments.

### Exhibit 1: UC Is Not Fully Deployed



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Many businesses have yet to complete the deployment because of the complexities of managing a UC solution, which include the following:

- **Legacy management tools are outdated.** Today's management tools were designed for best effort services and static applications. The dynamic nature and real-time characteristics of voice over IP (VoIP) and video cannot be managed with legacy tools.

- **UC problems are hard to identify.** Networks are so resilient today that when a network device fails, a backup device takes over almost immediately. However, a “brownout” situation in which congestion issues impede performance is more difficult to remedy. ZK Research data confirms that these problems are extremely difficult to identify—73% of UC trouble calls are identified by the user before the IT department knows about them.
- **UC takes a long time to troubleshoot.** According to ZK Research, on average, 90% of UC troubleshooting time consists of simply identifying where the issue is. UC is composed of many infrastructure components that must work together to deliver a business-grade experience—including physical servers, virtual workloads, wired endpoints, wireless clients and other infrastructure—and this complicates the troubleshooting process.
- **UC management is reactive today.** Without the proper tools, the process of managing a large UC environment becomes largely reactive. Consequently, network operations staff must fix many problems “on the fly.” These fixes often go undocumented and can lead to other problems in the future.

Clearly, businesses need a robust UC management tool to fully leverage the technology and maximize ROI. This paper highlights how Oracle’s Enterprise Operations Monitor (EOM) can be used to change the UC management paradigm from a reactive manual process to one that is predictive and automated.

## Section II: Enterprise Operations Monitor Simplifies Communications Management

Managing UC involves more than just managing the infrastructure. Although the servers, endpoints, routers and switches are certainly critical, so is the ability to manage communication flows. This includes controlling Session Initiation Protocol (SIP) trunks, conference bridges, messaging systems, contact center infrastructure and line-side communications between the PBX and handsets. EOM is a robust tool that can manage each of these communication flows.

The use of SIP trunks as an alternative to traditional PSTN trunks has increased significantly over the

past few years. The benefits of migrating to SIP trunking include saving money on trunk costs and enabling B2B communications. However, SIP trunks differ greatly from Primary Rate Interfaces (PRIs). PRIs provide synchronous communications over fixed-bandwidth dedicated circuits, whereas SIP trunks provide asynchronous communications over a shared network that offers varying bandwidth. The shared nature of SIP trunks makes them difficult to manage without the proper tools in place. A tool must provide an end-to-end view of the communication flow along with the capability to quickly identify problems and the ability to drill down to the root cause of the issue.

### Case Study 1: Fortune 100 Healthcare Provider

A Fortune 100–ranked healthcare provider was facing the management challenges of SIP trunking. Its contact center architect was migrating its massive call center organization to SIP trunking. The company had a total of 30,000 agents with a peak utilization of 24,000 calls, making it a very large contact center.

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*“Enterprise Operations Monitor was easy to set up and required very little training. The operations team was quickly able to build complex scripts, find problems and then optimize the call flow. Prior to EOM, the time to build and implement a call flow was several hours. With EOM, the time is roughly five minutes, providing a significant ROI to the business.”*

*– Contact Center Architect,  
Fortune 100 Healthcare Provider*

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Like most organizations, the healthcare company had a reactive management model for supporting telecom services. The call center manager wanted to adopt a more proactive model so problems could be identified before they affected agents. He felt that the migration to SIP trunking was the perfect opportunity to implement a new management model.

To enable this shift, the organization purchased Oracle's Enterprise Operations Monitor initially for the purpose of monitoring the termination point for the SIP trunks. One reason the company chose EOM was that each enterprise session border controller (E-SBC) that is used to terminate a SIP trunk has an EOM probe embedded in it. This provides a significant cost advantage compared to deploying mirrored switch ports and standalone probes at each connection point.

Another advantage of EOM is that the product is very easy to use. Although many competitive products require long training periods, the IT staff was able to use the product almost instantly with very little training—clicking on calls and pulling up traces to follow call paths. This capability is extremely important in call centers because end-to-end call flows can be mapped out showing how customers are routed through the call center, where calls go and where they may get dropped. This capability plus the powerful scripting tool enabled the organization to meet its goal of testing all call scenarios.

EOM proved to be very easy to use but also very robust. Almost immediately, the operations team could click on calls, pull up traces and build call scripts with no training. EOM shows the exact path of the call flow, including where the call was initiated, what proxies it passed through and where the call was terminated. Understanding these factors can help the healthcare organization optimize the experience when clients call into the contact center. This enables it to quickly make changes to the environment such as modifying call routes, IVR scripts or dial plans. Before the healthcare organization implemented EOM, building and implementing a call flow took several hours. With EOM, it takes roughly five minutes, providing a significant ROI to the business.

### Case Study 2: Global Furniture Manufacturer

A global furniture manufacturer with over 5,000 employees and operations in more than 100 countries agrees about the value EOM can bring to SIP environments. A senior telecom engineer brought EOM into his environment because of how different SIP is from traditional PRIs. The company was installing costly hardware probes to troubleshoot and tweak the network. This approach was so expensive that the company could only purchase enough probes to deploy in network segments that were experiencing problems. Using a process that required a high degree of network knowledge, the IT staff moved the probes to collect troubleshooting data and then manually correlated and analyzed the data.

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*“Prior to the implementation of EOM, we relied heavily on the use of network probes to understand our SIP environments. This was slow, expensive and often required people to be deployed in the field. What used to take several hours with legacy probes, EOM can do in about 30 seconds.”*

*– Senior Telecom Engineer,  
Global Furniture Manufacturer*

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In addition, the process was very slow because highly paid network engineers had to be deployed in the field to install the probes, collect the data and then analyze the information. Only after all these steps were completed could the problem be diagnosed and solved.

This management model was highly reactive and was normally triggered by a user complaint. Because EOM is continually collecting data, problems could be identified during the SIP migration almost immediately.

The use of SIP trunking is growing rapidly because it provides numerous benefits to the deploying organization. An application such as EOM is essential to the success of SIP trunking migration. According to ZK Research, EOM can reduce the amount of time needed to solve SIP-related issues by up to 80%.

In addition to managing the trunk-side connections—either PBX to PBX or PBX to PSTN—EOM can monitor the connections between the PBX and the IP phone. The combination of the two provides a holistic, end-to-end view of the call flow, making it easier to tune the environment and isolate problems.

## Section III: Proactive Management with Enterprise Operations Monitor

Another reason the companies in both case studies deployed EOM was to shift to a proactive UC management model. UC requires proactive management because downtime in real-time communications, such as VoIP or video, can cost companies millions of dollars an hour. Outages in call centers can result in customer frustration and even cause long-term brand damage.

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*“EOM allows each group to have a customized dashboard. We currently have eight customized views into the UC environment. No other tool has the flexibility to provide this level of specific information.”*

*– Contact Center Architect,  
Fortune 100 Healthcare Provider*

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Old-world communications devices, such as a digital PBX, were fairly simple in architecture and had few components: a PBX, phone and cable. If there was an issue, the problem was with one of those three elements. Modern-day UC systems are composed of software clients, virtual components, cloud resources, wireless endpoints and other technology, making managing the environment very difficult.

The healthcare provider found that understanding call quality was very difficult due to the number of components in its UC solution. EOM provides a robust centralized dashboard that can be customized to monitor critical components and KPIs. The company was able to set up eight different dashboards that show each member of the department exactly what he or she needs to see. The dashboard displays real-time mean opinion score (MOS) information and easily shows customized information with just a few mouse clicks.

Using EOM, administrators can create custom alerts for certain conditions that can indicate trouble. Now when traffic deviates far from the norm, the operations team can extrapolate the data and predict when a problem will occur. The organization can proactively add more bandwidth, make a network configuration change or take some other action that can solve the problem before it affects users.

Additionally, unlike more expensive hardware probes that are deployed on a temporary basis, EOM can run all the time. The ongoing collection of data can help set baselines or allow the company to analyze the data to further improve the process. Based on interviews with the healthcare provider and the furniture manufacturer in our case studies, ZK Research recommends that companies take the following steps to proactively manage UC:

- Collect data on UC voice and video traffic for a period of two weeks.

- Set a baseline for what is considered a “normal” amount of traffic.
- Establish a variance from the norm at which point the quality of experience is affected.
- Monitor end-to-end traffic in a single pane of glass.
- Trigger alarms when exceeding the variance from the established baseline.
- Proactively investigate situations where the alarms are triggered for an extended period of time (e.g., one minute).

Proactive management is a key to UC success, and a tool such as EOM is needed to make the vision of proactive management a reality.

## Section IV: Troubleshooting VoIP

Without a tool such as EOM, network operations teams would need to mirror multiple ports on network devices and send the traffic to hardware probes. A highly paid engineer would then need to correlate Wireshark traces and analyze the data. This is a long, laborious process that causes organizations to have lengthy troubleshooting times. ZK Research data shows that problem identification accounts for, on average, 90% of the time taken to troubleshoot a problem. If organizations want to shorten the mean time to repair, they need to invest in tools that can identify a problem faster.

According to the furniture manufacturer, implementing EOM was very simple and it took less than two hours. The company has found EOM to be an excellent troubleshooting tool for VoIP environments. When workers report missing calls or failures, the product can quickly detect traffic spikes and monitor traffic patterns for any kind of anomalies that could affect the performance of VoIP.

When a user calls in with a VoIP issue or an alert is triggered, EOM enables the administrator to drill down on the call flow and immediately identify where the problem is. This gives the network operations team a level of visibility that cannot be achieved with legacy monitoring software.

Additionally, EOM shows MOS scores for each call flow and each segment. This information can be used to further tweak and tune the network. The healthcare organization uses this feature to troubleshoot situations in which call center agents are unable to hear customers. The ability to drill down on call flows and zero in on the specific call leg where the MOS score is degraded ensures that the problem does not return.

EOM can provide robust troubleshooting capabilities because the solution is flow centric and not infrastructure based. Tools that are infrastructure focused take a bottom-up approach to monitoring the network. These tools collect device information that must be rolled up to a centralized console and then analyzed manually. With its flow-based platform, EOM looks at the actual end-to-end call flow, which can then be drilled down upon to identify the faulty component when a problem occurs. The real-time call flow focus of EOM is the only way to truly monitor and manage user experiences in large UC networks.

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*“EOM does an excellent job of correlating all the information needed to find problems into one screen. It can pinpoint where an issue is—from the call path through all of the infrastructure components.”*

*– Senior Telecom Engineer,  
Global Furniture Manufacturer*

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## Section V: Other Benefits of Oracle Enterprise Operations Monitor

EOM is a powerful, end-to-end tool that can correlate call information in real time. It provides network-wide views of call information and network equipment statistics as well as group and trunk information. In addition to an unparalleled view of the environment, EOM provides full drill-down information into the network for call flow analysis.

The previous three sections of this paper discuss the benefits derived from just two Oracle customer implementations. Organizations that deploy EOM may also realize the following advantages:

- **Reduction in operational costs:** EOM enables IT individuals to work more effectively by reducing problem isolation times and speeding up the troubleshooting process. The solution also generates comprehensive reports containing network information that can be used to hold service providers and infrastructure vendors accountable to service level agreements (SLAs). Without the reports, customers have no way of proving lapses in SLA compliance.

- **Increased service quality:** Because EOM provides the ability to proactively manage UC environments, companies can identify problems before service is affected. IT organizations can now create service-level agreements that are consistently achievable.
- **Manageable multivendor environments:** EOM is compatible with SIP networks built on products from all of the leading vendors. Customers can deploy multivendor solutions with the assurance that the end-to-end solution will provide the same experience as a single-vendor solution.
- **Rapid provisioning of services:** All of the information is gathered automatically for all users. New users become visible as soon as they are connected to the network. Individual or bulk provisioning of user information is no longer necessary, so deployment times can be shortened by an order of magnitude.

## Section VI: Conclusion and Recommendations

Unified communications is a transformative technology. Businesses can use UC to streamline business processes, create new ways of servicing customers, build competitive advantage and lower the cost of communications. However, as powerful as UC is, it can actually make employees less productive if its performance and quality are not on par with those of old-world communications systems. IT leaders must ensure that the management of the UC infrastructure is a priority rather than an afterthought.

Because there's no cookie-cutter approach to managing UC, ZK Research offers the following recommendations:

- **Shift to a predictive management model.** Most infrastructure management is done reactively—that is, wait for a user to report a problem and then start troubleshooting. With UC, it's imperative to shift to a predictive management model by collecting data continuously, analyzing it and using the information to predict when problems will occur. Then, proactively investigate why the problem will occur and take steps to address the issue before it escalates.
- **Raise the bar on service quality.** Users expect to have a high-quality service experience with UC. IT organizations that leverage EOM can confidently set robust service-level agreements that they can consistently achieve.

- **Use a real-time flow-based solution built for UC.** Many infrastructure management tools are available today. However, most of these tools are not built for the real-time nature of voice and video traffic. To gain perspective on the user experience, implement a solution that uses flow-based information, such as the Oracle Enterprise Operations Monitor.