

ORACLE®
Management Cloud

Maximize the Value of Your Oracle Exadata Investment with Oracle Management Cloud

Harness the value of machine learning with
next-generation autonomous management

ORACLE®

Oracle Exadata Database Machine has been the critical linchpin for the digital transformation of many companies. As cloud computing technologies mature, and organizations look toward increasingly flexible development and deployment models, the role of Oracle Exadata is proving more pivotal than ever. Companies are asking questions such as:

- How can I optimize my Oracle Exadata resources even as I adopt cloud computing?
- How will I know if I am approaching full capacity and what are my best options for procuring additional capacity?
- Which of my Oracle Exadata databases need my attention and where are they deployed?
- How can I maximize utilization across Oracle Exadata and other infrastructure?

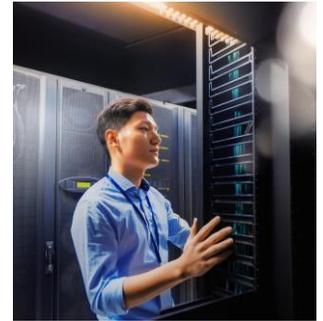
Oracle helps customers find answers to these questions and more with **Oracle Management Cloud**, a 100 percent cloud-based solution for monitoring, management, and analytics powered by big data analytics and machine learning.

BUSINESS CHALLENGES

In our fast-changing business climate, enterprises constantly look for new technologies to streamline processes. Many successful companies are already driving efficiencies by consolidating more databases on Oracle Exadata to lower their overall cost of ownership. IT executives and Oracle Exadata administrators are under continuous pressure to:

- Maximize performance across databases running on Oracle Exadata
- Drive utilization by consolidating more databases onto Oracle Exadata
- Troubleshoot daily operational issues faster to improve mean time to recovery
- Ensure sufficient resource capacity to meet future demand

With so much complexity in today's data centers, IT organizations need to set priorities for coping with day-to-day tasks and long-term projects. Being able to automate those tasks can help relieve some of the pressure.



Oracle Management Cloud is a 100 percent cloud-based solution for monitoring, management, and analytics powered by big data analytics and machine learning.

INTRODUCING ORACLE MANAGEMENT CLOUD

To optimize system management, businesses require a solution that can manage a complex hybrid cloud environment: Oracle Cloud, non-Oracle cloud, on-premises assets on traditional hardware, and engineered systems such as Oracle Exadata. IT and database managers need an integrated monitoring and analytics toolset.

A next-generation management suite, Oracle Management Cloud provides powerful analytics and intelligence capabilities to help you get the most out of Oracle Exadata. Built on a unified data platform with integrated, advanced machine learning and anomaly detection, Oracle Management Cloud delivers an automated and efficient management experience. The solution enables administrators to gain a deep understanding and view of the entire application stack, so they can prevent issues before they occur. This proactive approach results in less management effort and cost than that associated with trying to manually tune or troubleshoot slow-running application environments.

Armed with a deep understanding of how database applications are performing, your IT team can analyze performance bottlenecks or troubleshoot faults faster—and in a more targeted manner—across your Oracle Exadata estate. You can make intelligent decisions about future capacity needs based on historical system performance, and then execute those remediations with precision orchestration and automation, resulting in better application performance.

While most businesses already have monitoring tools that may provide some degree of benefit—such as detecting slow performance—those tools collect only limited data from siloed systems. Oracle Management Cloud's unique approach to systems management eliminates this shortfall. The solution unifies all operational data and log files, whether it's application traces or database performance metrics from your existing on-premises tools.

But that's only half of the story.

Oracle Management Cloud also has purpose-built machine learning, specifically designed for IT Operations and DevOps. It will self-learn normal and abnormal behavior, looking for and analyzing potential anomalies. Within minutes, operators can get insights into system and application performance. And Oracle Management Cloud is 100 percent cloud-based, so you can get up and running quickly without having to build and maintain a solution that requires constant maintenance.

The end-result is an organization that receives actionable insights and resolves issues faster, enabling you to focus on the larger business objectives instead of just trying to maintain operational status quo. By using all the relevant data and coupling it with machine learning insights, your organization can make better predictions and identify causation, not just normal correlations.

AN INTELLIGENT CHOICE FOR ORACLE EXADATA MANAGEMENT

Oracle Management Cloud provides 360-degree insight into the performance, availability, and capacity of your Oracle Exadata investment. It enables IT executives, data center operations staff, and administrators to make critical decisions about Oracle Exadata environments based on the comprehensive machine learning and data analysis built into Oracle Management Cloud.

With visual, integrated dashboards available in Oracle Management Cloud, organizations can see where Oracle Exadata computing and storage resources are being over used or underutilized, and where workloads spike with excessive use of memory, CPU, or I/O. You get predictable performance and significantly lowered risk of failure.



Hybrid Approach: Take Advantage of Oracle Enterprise Manager Data in Oracle Management Cloud

- Oracle Management Cloud's unified data platform provides deep insights and a broad, intuitive view of your on-premise and cloud IT estate.
- Data from Oracle Enterprise Manager and the Automatic Workload Repository (AWR) in Oracle Database can be ingested by Oracle Management Cloud to gain insights and trending analytics on resource utilization over longer periods of time.
- Machine learning extends the data collected in Oracle Enterprise Manager, leading to deeper analysis and insights.

By eliminating multiple monitoring tools and applying advanced machine learning, IT and database managers gain complete visibility across the entire Oracle Exadata environment and can forecast and prevent systemic issues. When problems do occur, the solution provides smart insights into what happened and how your team can resolve issues automatically.

Oracle Management Cloud Key Capabilities

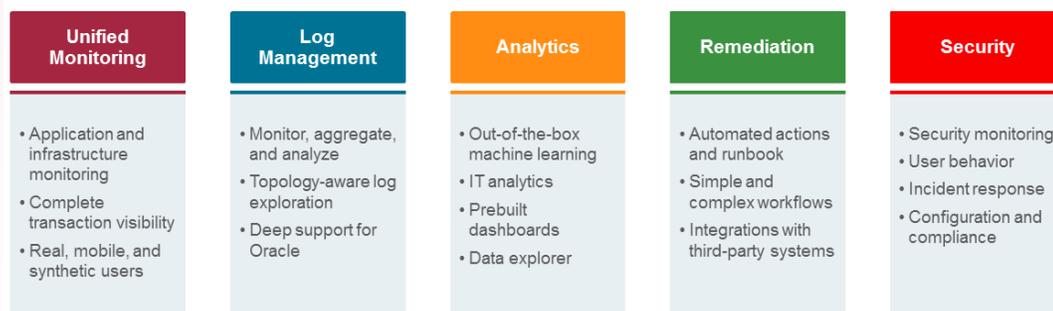


Figure 1. Key capabilities of Oracle Management Cloud include unified monitoring, log management, analytics, remediation, and security.

Optimal Resource Allocation

To successfully manage and maximize Oracle Exadata, you need a solution that can help you answer critical questions about what's happening in your environment. The first questions your team needs to answer involve resource utilization:

- Which Oracle Exadata systems have available capacity headroom to support consolidation of additional databases?
- Which resources will be bottlenecked based on current load growth from on-boarded databases?

If you are planning to consolidate and deploy your database applications on Oracle Exadata, you need predictable performance and the ability to manage capacity post-consolidation. The last thing you need is to run out of resources during peak demand. With Oracle Management Cloud, you are able to optimize Oracle Exadata's resources, allowing you to compare and forecast usage over time, spot trends, and predict future growth rates.

Application SQL Performance

To ensure your systems are running efficiently, you need the capability to analyze SQL performance across your Exadata databases. The questions here are typically:

- For databases migrated to Oracle Exadata, which SQL queries are performing better or worse than expected?
- Which of the lower performance SQL queries regressed due to bad plans versus excessive application waits?
- Are I/O waits coming from the disk or flash storage subsystem?

Analyzing the Health and Performance of Oracle Exadata Machines

A large health insurance company based in North America turned to Oracle Management Cloud to facilitate an enterprisewide analysis of resource utilization, including Oracle Exadata capacity planning. The company wanted to better understand its Oracle Exadata performance—both historic and forward-looking. The company selected Oracle Management Cloud based on its ability to analyze resources to increase Oracle Exadata utilization, visualize performance trends, provide insights into workloads, and plan consolidation.

With Oracle Management Cloud, you can analyze current SQL performance based on long-term SQL performance data and across an entire fleet of databases. The solution helps find systemic root causes of SQL performance issues:

- Compare performance trends across databases and drill down to execution plans for analysis.
- Get key insights into SQL performance issues.
- See automatic baselines and anomalies in SQL response time.
- Identify trends and forecast SQL response time and other key SQL performance metrics.
- Determine whether there was a plan change for the SQL resulting in regression.

Oracle Exadata Troubleshooting

With many traditional monitoring tools generating dashboards of data, IT organizations must make sense of all the data in an efficient way. With the volume of operational and log data growing every year, IT needs to understand what the data is really telling them. Keeping Oracle Exadata systems performing at full throttle means your team needs to troubleshoot any issues that arise. The problems and concerns often include:

- Which databases are reporting the most storage-related problems?
- How do I drill down from the application tier to Oracle Exadata to pinpoint faults and resolve issues?

Oracle Management Cloud provides topology-aware log exploration and analytics. You can search logs across the database and storage infrastructure through a visual, analytic interface—looking for clustering, patterns, and outliers.

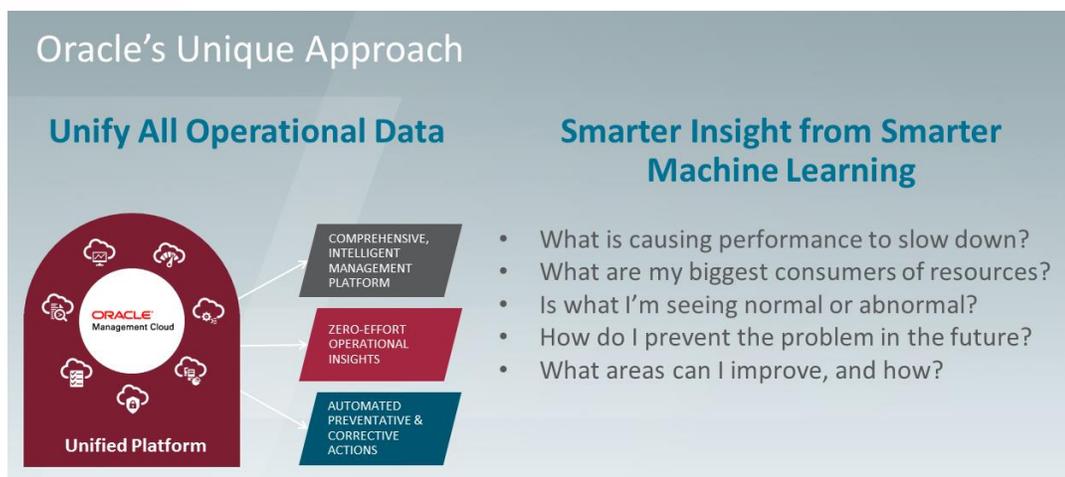


Figure 2. Oracle Management Cloud delivers a unique approach to unifying system data for better operational intelligence.

Most importantly, out-of-the-box machine learning in Oracle Management Cloud can group log patterns and identify outliers. Machine learning is a natural fit for systems management—because you can apply analytics and intelligence to separate the real issues from the noise. And when you apply machine learning to the data, you start to see that it's highly patterned. That means you can cluster the patterns together and use techniques such as multivariate correlation to forecast and gain insights into performance and capacity.

Gaining Insight into Oracle Exadata Capacity with Oracle Management Cloud

One of the leading diversified investment firms in the Middle East, Al Ghurair Investments, needed to have insight into its growing infrastructure for Oracle Exadata capacity planning. With its own on-premises data center and infrastructure in the cloud, it was maintaining a hybrid infrastructure with “absolutely no visibility,” according to Abdulla Ansar, Group Technical Architect at the firm.

When the company implemented Oracle Management Cloud, the IT team's first task was to use it for capacity planning and prepare a growth plan. That's when they discovered Oracle Exadata was running at capacity. If the company added users, the systems' performance would degrade. That realization—delivered by Oracle Management Cloud—led them to add another Oracle Exadata box.

The company also used Oracle Management Cloud to gain visibility into firewall issues. The alerts and notifications provided by Oracle Management Cloud pointed the IT team directly to a security firewall breach, which they corrected in a matter of seconds.

Ansar notes that with Oracle Management Cloud, the company was able to reduce management costs and free IT staff for more constructive projects. “Oracle Management Cloud is a proactive product that can reduce the amount of people we need to sit and watch monitors—the old-fashioned stuff,” he adds. To hear more from Ansar, [watch the video](#).

In addition, Oracle Management Cloud has proactive monitoring integrated with the event system to notify administrators of critical log errors.

ORACLE MANAGEMENT CLOUD AND ORACLE ENTERPRISE MANAGER

Oracle Management Cloud offers IT analytics and log analytics capabilities that add to and complement the monitoring functions already provided by Oracle Enterprise Manager. The value-added capabilities of Oracle Management Cloud include:

- The ability to analyze data collected by Oracle Enterprise Manager over the long term (up to 13 months by default) using machine learning-based insights to forecast resource needs; enables administrators to manage proactively, instead of reactively.
- The ability to manage a fleet of hosts and databases, allowing the administrator to identify common problems that span the entire IT estate instead of focusing only on one targets at a time.
- A unified big data platform that provides deep insights based on metric and log data across technical and business data for heterogeneous IT systems running on premises or on cloud.

QUANTIFIABLE VALUE OF ORACLE MANAGEMENT CLOUD

With Oracle Management Cloud, you can maximize the value of consolidation on Oracle Exadata by testing, migrating, and running more databases, while ensuring optimal performance with a broad portfolio of capabilities: unified monitoring, log management, analytics, remediation, and security.

Using Oracle Management Cloud for Oracle Exadata management has real, quantifiable value. By analyzing Oracle Exadata workloads up to 50 percent¹ faster, organizations have full availability of their systems. IT and database managers can maximize the value of consolidation on Oracle Exadata by testing, migrating, and running more databases—ensuring optimal performance that is up to four times faster.²

BENEFIT FROM ORACLE MANAGEMENT CLOUD

The benefits of using Oracle Management Cloud for managing Oracle Exadata are clear. The solution provides unique capabilities and insights that give your team the ability to:

- **Drive Oracle Exadata utilization by consolidating databases.** Automatically compares and forecasts Oracle Exadata resource usage over time—including seasonality trends—to predict future growth rates.
- **Deliver insights into workload performance.** A single-pane-of-glass view enables actionable insights across the entire Oracle Exadata estate.
- **Troubleshoot problems quickly.** Built on a unified data platform, the solution leverages rich, powerful analytics and offers proactive monitoring and remediation.
- **Optimize resource capacity to meet demand.** With machine learning, you can project future capacity needs based on intelligent forecasts of database workload growth.



Rapid Troubleshooting Keeps Databases Humming

A large North American financial services firm needed to rapidly troubleshoot its Oracle Exadata systems with the goal of finding—and fixing—the problem databases. The IT team chose Oracle Management Cloud for its ability to collect, aggregate, and analyze all log data across systems to make it easy for administrators to quickly identify and resolve issues.

¹ [Oracle Management Cloud: Customer Lookbook](#), “Customer Success Stories: Transition Technologies S.A.—Poland,” 2017. oracle.com/us/solutions/cloud/oracle-management-cloud-customers-4031882.pdf

² “FORS Distribution Boosts Solution Center Performance with Oracle Cloud,” August 2017. oracle.com/customers/fors-1-omc.html

TO LEARN MORE

To begin leveraging your Oracle Exadata investment with Oracle Management Cloud, visit oracle.com/managementcloud.

Download the brief "[Oracle Management Cloud, the Next Generation of Systems Management.](#)"

Sign up for a free Oracle Management Cloud trial at cloud.oracle.com/tryit.

ORACLE CORPORATION

Worldwide Headquarters

500 Oracle Parkway, Redwood Shores, CA 94065 USA

Worldwide Inquiries

TELE + 1.650.506.7000 + 1.800.ORACLE1

FAX + 1.650.506.7200

oracle.com

CONNECT WITH US

Call +1.800.ORACLE1 or visit oracle.com. Outside North America, find your local office at oracle.com/contact.

 blogs.oracle.com/oracle

 facebook.com/oracle

 twitter.com/oracle

Integrated Cloud Applications & Platform Services

Copyright © 2018, Oracle and/or its affiliates. All rights reserved. This document is provided for information purposes only, and the contents hereof are subject to change without notice. This document is not warranted to be error-free, nor subject to any other warranties or conditions, whether expressed orally or implied in law, including implied warranties and conditions of merchantability or fitness for a particular purpose. We specifically disclaim any liability with respect to this document, and no contractual obligations are formed either directly or indirectly by this document. This document may not be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without our prior written permission.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group. 0818

ORACLE®



Oracle is committed to developing practices and products that help protect the environment