# Contents

## Preface

<table>
<thead>
<tr>
<th>Audience</th>
<th>v</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documentation Accessibility</td>
<td>v</td>
</tr>
<tr>
<td>Related Resources</td>
<td>v</td>
</tr>
<tr>
<td>Conventions</td>
<td>v</td>
</tr>
</tbody>
</table>

## 1 Overview of Oracle Enterprise Manager Cloud Control 13c

<table>
<thead>
<tr>
<th>About Enterprise Manager Cloud Control 13c</th>
<th>1-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise Manager Cloud Control Architecture</td>
<td>1-2</td>
</tr>
<tr>
<td>Architecture of Enterprise Manager Cloud Control</td>
<td>1-2</td>
</tr>
<tr>
<td>About Oracle Management Agent</td>
<td>1-3</td>
</tr>
<tr>
<td>About Oracle Management Service (OMS)</td>
<td>1-4</td>
</tr>
<tr>
<td>About Oracle Management Repository</td>
<td>1-4</td>
</tr>
<tr>
<td>About Plug-ins</td>
<td>1-4</td>
</tr>
<tr>
<td>About Oracle JVMD Engine</td>
<td>1-5</td>
</tr>
<tr>
<td>About Oracle Analytics Server</td>
<td>1-5</td>
</tr>
<tr>
<td>About Enterprise Manager Cloud Control Console</td>
<td>1-6</td>
</tr>
<tr>
<td>About EMCTL</td>
<td>1-6</td>
</tr>
<tr>
<td>About EM CLI</td>
<td>1-6</td>
</tr>
<tr>
<td>Enterprise Manager Management Focus Areas</td>
<td>1-6</td>
</tr>
<tr>
<td>Framework and Infrastructure</td>
<td>1-6</td>
</tr>
<tr>
<td>Enterprise Monitoring</td>
<td>1-7</td>
</tr>
<tr>
<td>Application Management</td>
<td>1-7</td>
</tr>
<tr>
<td>Database Management</td>
<td>1-7</td>
</tr>
<tr>
<td>Database Administration</td>
<td>1-8</td>
</tr>
<tr>
<td>Database Maintenance</td>
<td>1-9</td>
</tr>
<tr>
<td>Database Performance Management</td>
<td>1-10</td>
</tr>
<tr>
<td>Database Security Management</td>
<td>1-11</td>
</tr>
<tr>
<td>Database Lifecycle Management</td>
<td>1-11</td>
</tr>
<tr>
<td>Middleware Management</td>
<td>1-12</td>
</tr>
<tr>
<td>Hardware and Virtualization Management</td>
<td>1-12</td>
</tr>
<tr>
<td>Heterogeneous (Non-Oracle) Management</td>
<td>1-13</td>
</tr>
</tbody>
</table>
## New Features in Oracle Enterprise Manager Cloud Control 13c Release 5

### New Features by Release Update
- New Features in Oracle Enterprise Manager 13.5 Release Update 4
- New Features in Oracle Enterprise Manager 13.5 Release Update 3
- New Features in Oracle Enterprise Manager 13.5 Release Update 2
- New Features in Oracle Enterprise Manager 13.5 Release Update 1
- New Features in Oracle Enterprise Manager 13.5

### New Features by Focus Area
- Installation and Upgrade
- Configuration, Security, and Maintenance
- Enterprise Monitoring
- Database Management
  - Database Lifecycle Management
  - Engineered Systems Management
- Cloud Management
- Enterprise Manager Command Line Interface
- Enterprise Manager Mobile

---

### Index
Preface

This manual introduces Oracle Enterprise Manager. It provides a brief overview of the system architecture and describes the key features of the product. The manual also details new features in this release.

Audience

This manual is intended for all users of Oracle Enterprise Manager.

Documentation Accessibility

For information about Oracle’s commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Related Resources

For detailed information on Oracle Enterprise Manager architecture and focus areas, see the documentation available in Oracle Help Center:


Conventions

The following text conventions are used in this document:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>boldface</strong></td>
<td>Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.</td>
</tr>
<tr>
<td><em>italic</em></td>
<td>Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.</td>
</tr>
<tr>
<td><em>monospace</em></td>
<td>Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.</td>
</tr>
</tbody>
</table>
Overview of Oracle Enterprise Manager Cloud Control 13c

This chapter provides an overview of Enterprise Manager Cloud Control 13c and helps you understand its architecture and the various core components that are integrated within the product. It contains the following sections:

- About Enterprise Manager Cloud Control 13c
- Enterprise Manager Cloud Control Architecture
- Enterprise Manager Management Focus Areas
- Enterprise Manager Cloud Control Certification Information

About Enterprise Manager Cloud Control 13c

Oracle Enterprise Manager is Oracle’s integrated enterprise information technology (IT) management product line, which provides the industry’s only complete, integrated, and business-driven enterprise cloud management solution. Oracle Enterprise Manager creates business value for IT by leveraging the built-in management capabilities of the Oracle stack for traditional and cloud environments, enabling customers to achieve unprecedented efficiency gains while dramatically increasing service levels.

The key capabilities of Enterprise Manager include:

- A complete cloud lifecycle management solution enabling you to quickly set up, manage, and support enterprise clouds and traditional Oracle IT environments from applications to disk.
- Maximum return on IT management investment through the best solutions for intelligent management of the Oracle stack and engineered systems with real-time integration of Oracle’s knowledge base with each customer environment.
- Best service levels for traditional and cloud applications through business-driven application management.

Figure 1-1 illustrates how Enterprise Manager Cloud Control offers a solution that enables you to monitor and manage the complete Oracle IT infrastructure from a single console.
Enterprise Manager Cloud Control Architecture

This section introduces you to the architecture of Enterprise Manager Cloud Control and describes the core components of the product. It includes the following sections:

- Architecture of Enterprise Manager Cloud Control
- About Oracle Management Agent
- About Oracle Management Service (OMS)
- About Oracle Management Repository
- About Plug-ins
- About Oracle JVMD Engine
- About Oracle Analytics Server
- About Enterprise Manager Cloud Control Console
- About EMCTL
- About EM CLI

Architecture of Enterprise Manager Cloud Control

Enterprise Manager Cloud Control includes the following components:

- Oracle Management Agent
- Oracle Management Service
- Oracle Management Repository
- Plug-ins
- Enterprise Manager Cloud Control Console

Figure 1-2 shows a sample Enterprise Manager Cloud Control configuration and illustrates how these core components fit into the architecture.
Figure 1-2  Enterprise Manager Cloud Control Architecture

Note:

In Figure 1-2, the load balancer and the multiple Oracle Management Service (OMS) instances are depicted only to indicate how a sample Enterprise Manager Cloud Control architecture would look in a large organization. They are not a prerequisite or a requirement for an Enterprise Manager system installation. If you do not have a load balancer, then the Management Agents communicate directly with the OMS instances.

About Oracle Management Agent

The Management Agent is an integral software component that enables you to convert an unmanaged host to a managed host in the Enterprise Manager system. The Management Agent works in conjunction with the plug-ins to monitor the targets running on that managed host.
With the first Oracle Management Service (OMS) you install, by default you receive a Management Agent called the Central Agent. The Central Agent is used for monitoring only the first OMS host, the first OMS, and the other targets running on the first OMS host. To monitor other hosts and the targets running on those hosts, you must install a separate Standalone Management Agent on each of those hosts.

About Oracle Management Service (OMS)

Oracle Management Service (OMS) is a Web-based application that orchestrates with the Management Agents and the plug-ins to discover targets, monitor and manage them, and store the collected information in a repository for future reference and analysis. The OMS also renders the user interface for Enterprise Manager Cloud Control.

The OMS is deployed to the middleware home, which is the parent directory that contains Oracle WebLogic Server, OMS, plug-ins, Java Development Kit (JDK), Oracle WT directory, Oracle Common, and other relevant configuration files and directories. While installing the OMS, the Enterprise Manager Cloud Control Installation Wizard automatically installs Oracle WebLogic Server and JDK, and therefore, a WebLogic Server admin console is available by default.

About Oracle Management Repository

The Oracle Management Repository (Management Repository) is a storage location where all the information collected by the Management Agent gets stored. It consists of objects such as database jobs, packages, procedures, views, and tablespaces.

The OMS uploads the monitoring data it receives from the Management Agents to the Management Repository. The Management Repository then organizes the data so that it can be retrieved by the OMS and displayed in the Enterprise Manager Cloud Control console. Since data is stored in the Management Repository, it can be shared between any number of administrators accessing the Enterprise Manager Cloud Control.

At the time of installation, the Enterprise Manager Cloud Control Installation Wizard configures the Management Repository in your existing, certified database. The wizard, however, does not install a new database.

About Plug-ins

Plug-ins are pluggable entities that offer special management capabilities customized to suit specific target types. Unlike the earlier releases of Enterprise Manager, in Enterprise Manager Cloud Control, the plug-ins work in conjunction with the OMS and the Management Agent to monitor every target in your environment. Therefore, they are deployed to the OMS as well as the Management Agent. In the earlier releases, plug-ins enabled you to monitor only third-party targets, but in Enterprise Manager Cloud Control, plug-ins enable you to monitor all types of targets in your environment.

Plug-ins have independent release cycles, so every time you have a new version of an Oracle product released, you will have a new version of the plug-in released to support monitoring of that new product version in Enterprise Manager Cloud Control. An independent release cycle simplifies things because you no longer have to wait to upgrade your Enterprise Manager system to support a new product version; instead you can upgrade your plug-ins to monitor the new product version.
Table 1-1 lists the default plug-ins that are installed with a new Enterprise Manager system. In addition to these plug-ins, you can optionally install other plug-ins available in the software kit (DVD, downloaded software bundle, and so on). The installer offers a screen where you can select the optional plug-ins and install them.

Table 1-1  Default Plug-ins Installed with Enterprise Manager Cloud Control

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Database</td>
<td>Enables you to discover, monitor, and manage Oracle Database and related</td>
</tr>
<tr>
<td></td>
<td>targets such as Oracle Real Application Clusters (Oracle RAC), Oracle</td>
</tr>
<tr>
<td></td>
<td>Automatic Storage Management (Oracle ASM), and so on.</td>
</tr>
<tr>
<td>Oracle Fusion Middleware</td>
<td>Enables you to discover, monitor, and manage Oracle Fusion Middleware</td>
</tr>
<tr>
<td></td>
<td>products such as Oracle WebLogic Domain, Oracle WebLogic AdminServer,</td>
</tr>
<tr>
<td></td>
<td>Oracle WebLogic Server, Oracle SOA Suite, Oracle Web Tier, and so on.</td>
</tr>
<tr>
<td>Oracle Exadata</td>
<td>Enables you to discover, monitor, and manage Oracle Exadata targets.</td>
</tr>
<tr>
<td>Oracle Cloud Framework</td>
<td>Enables you to discover, monitor, and manage Oracle Exadata targets.</td>
</tr>
<tr>
<td>Systems Infrastructure</td>
<td>Enables you to discover, monitor, and manage Oracle Exadata targets.</td>
</tr>
<tr>
<td></td>
<td>Enables you to access basic features that are common across cloud services</td>
</tr>
<tr>
<td></td>
<td>such as Database as a Service (DBaaS) and Infrastructure as a Service (IaaS).</td>
</tr>
</tbody>
</table>

For a complete list of the plug-ins available with Oracle Enterprise Manager, see Plugins Included In This Release in Enterprise Manager Cloud Control Release Notes.

About Oracle JVMD Engine

Java Virtual Machine Diagnostics (JVMD) Engine enables you to diagnose performance problems in Java applications in the production environment. By eliminating the need to reproduce problems, it reduces the time required to resolve these problems, thus improving application availability and performance.

Starting with Oracle Enterprise Manager 13c, as part of the Oracle Fusion Middleware Plugin deployment, one JVMD Engine is installed and configured by default on the OMS. For every additional OMS you deploy, you receive one JVMD Engine by default with that OMS.

While JVMD Engine is installed by default on the OMS host, you will still need JVMD Agents to be manually deployed on the targeted JVMs.

About Oracle Analytics Server

Starting with Oracle Enterprise Manager (EM) 13.5, Oracle Business Intelligence (BI) Publisher is no longer bundled with the EM installation or managed by the EM utilities, EMCTL and EMCLI. BI Publisher, rebranded as Oracle Analytics Server (OAS) v5.5.0 or above, needs to be installed independently of EM and managed by OAS utilities. Update all your EMCTL or EMCLI scripts that make references to BI Publisher verbs.
About Enterprise Manager Cloud Control Console

The Enterprise Manager Cloud Control console is the user interface you see after you install Enterprise Manager Cloud Control. See Figure 1-1. With the help of the console, you can monitor and administer your entire computing environment from one location on the network. All the systems and services including enterprise application systems, databases, hosts, middleware application servers, listeners, and so on, are easily managed from one central location.

About EMCTL

EMCTL is a command-line tool that enables you to execute certain tasks on the OMS and Management Agents. You can use it for tasks such as starting or stopping OMS instances, setting properties on OMS instances, or getting a list of targets being monitored by a specific Management Agent. EMCTL commands are executed on a specific OMS or Management Agent.

About EM CLI

The Enterprise Manager Command Line Interface (EM CLI) is a command-line tool that is accessible through classic programming language constructs, enabling tasks to be created and run either from the command-line or programatically. EM CLI enables you to access Enterprise Manager Cloud Control functionality from text-based consoles (shells and command-line windows) for a variety of operating systems.

Enterprise Manager Management Focus Areas

This section provides brief descriptions of the following management focus areas:

- Framework and Infrastructure
- Enterprise Monitoring
- Application Management
- Database Management
- Middleware Management
- Hardware and Virtualization Management
- Heterogeneous (Non-Oracle) Management
- Cloud Management
- Hybrid Cloud Management
- Lifecycle Management
- Application Performance Management
- Application Quality Management

Framework and Infrastructure

Oracle Enterprise Manager is a critical tool for data center management. It has a framework that is secure, scalable, and highly available. With a next-generation user
interface, it provides a rich, intuitive console that can be customized to suit different roles. Oracle Enterprise Manager framework also has advanced capabilities such as self-update where key components such as target plug-ins, compliance policies, and deployment procedures can be updated automatically as newer versions become available.

Oracle Enterprise Manager framework is enterprise-ready and is designed to manage and monitor critical business operations to ensure smooth running of enterprise data centers.

Enterprise Monitoring

World class enterprise monitoring is about monitoring the status of your infrastructure and applications, notifying the appropriate IT staff when incidents occur, and reporting on status, history, and trends to interested parties throughout IT and the business. Oracle Enterprise Manager provides rich monitoring features as a foundation for monitoring all components of your IT infrastructure (Oracle and non-Oracle) as well as the applications and services that are running on them. These features enable IT to proactively monitor and resolve issues by business priority, implement operational best practices for monitoring, and provide consistent, high quality service in support of business goals.

Application Management

Oracle provides advanced, out-of-the-box application management solutions for Oracle E-Business Suite, Siebel, Peoplesoft, JD Edwards, and Fusion Applications. They provide end-to-end, integrated application monitoring and management capabilities, resulting in improved availability, predictability, and reliability. Oracle Enterprise Manager's management capabilities include user experience management, performance management, change and configuration management, patching, provisioning, testing, integrated diagnostics, and automatic tuning.

Enterprise Manager also offers advanced management capabilities for managing custom applications, integrations, and extensions.

Database Management

Oracle Enterprise Manager Cloud Control is the premier tool for managing your Oracle Database environment.

Database management involves the monitoring, administration, and maintenance of the databases and database groups in your enterprise and with Enterprise Manager you receive:

- A complete set of integrated features for managing Oracle Database, which enables you to:
  - Perform day-to-day tasks and run repetitive jobs
  - Detect problems and use the available guided resolution workflows
- Unparalleled scalability that lets you manage a single database or thousands of instances.
- An intuitive management product that leads the industry in ease of deployment and use.

You can perform Database Management tasks on the Database Home page in the Oracle Enterprise Manager Cloud Control UI or Oracle Enterprise Manager Database Express, which is a web-based database management tool that is built inside the Oracle Database.

Edition. However, you must have the Oracle Database Enterprise Edition to use the entire breadth of database management features that Oracle Enterprise Manager Cloud Control provides with the following management packs:

- Oracle Diagnostics Pack
- Oracle Tuning Pack
- Oracle Database Lifecycle Management Pack
- Oracle Data Masking and Subsetting Pack
- Oracle Real Application Testing
- Legacy: Configuration Management Pack for Oracle Database
- Legacy: Change Management Pack for Oracle Database
- Legacy: Provisioning and Patch Automation Pack for Oracle Database

For information on generic Oracle Enterprise Management Cloud Control and Oracle Database concepts, see:

- Introduction to Oracle Enterprise Manager Database Express in *Oracle Database 2 Day DBA*
- Enterprise Database Management in the *Enterprise Manager Cloud Control Licensing Information User Manual*
- *Oracle Database Concepts*

The following sections provide information on some of the Database Management capabilities provided by Oracle Enterprise Manager Cloud Control with links to more information:

- **Database Administration**
- **Database Maintenance**
- **Database Performance Management**
- **Database Security Management**
- **Database Lifecycle Management**

**Database Administration**

Using Oracle Enterprise Manager Cloud Control you can keep your Oracle Databases available and running efficiently.

You can use the available administration tools to manage database objects and initiate database operations inside an Oracle Database.

The following list provides some of the database administration tasks you can perform:

- Allocate system storage and plan future storage requirements.
- Use the Oracle Scheduler to control when and where various tasks occur in the database environment.
- Migrate your database storage to use Oracle Automatic Storage Management.
- Use the Database Resource Manager to control the distribution of resources among various sessions by controlling the execution schedule inside the database.
• Create and manage primary database objects such as tables, views, and indexes.
• Perform administration tasks for Oracle XML DB, such as viewing or editing parameters for the Oracle XML DB configuration file.
• Create, manage, and perform specific actions against materialized views, which are schema objects that can be used to summarize, compute, replicate, and distribute data.

For detailed information, see:
• Managing Database Storage Structures in *Oracle Database 2 Day DBA*
• Administering Oracle ASM with Oracle Enterprise Manager in the *Oracle Automatic Storage Management Administrator's Guide*
• Managing Resources with Oracle Database Resource Manager in the *Oracle Database Administrator's Guide*
• Oracle Scheduler Concepts in the *Oracle Database Administrator's Guide*
• Administration of Oracle XML DB in the *Oracle XML DB Developer's Guide*

**Database Maintenance**

Oracle Enterprise Manager Cloud Control provides functions to maintain Oracle Databases. The following list provides some of the database maintenance tasks you can perform:

• Use backup and recovery features such as:
  – Physical backup and recovery that is built on Oracle's Recovery Manager (RMAN) command-line client.
  – Complete or point-in-time media recovery.
  – Flashback recovery, which provides a range of physical and logical data recovery tools as efficient, easy-to-use alternatives to physical and logical backups.

• Configure Oracle Data Guard and use its comprehensive capabilities to manage and monitor primary and standby databases.
• Use the Transport Tablespaces wizard to copy a set of tablespaces from one Oracle Database to another.
• Monitor Oracle Real Application Clusters.
• Use the Database High Availability (HA) console to monitor database HA.
• Use the Database Maximum Availability Architecture (MAA) Advisor page to view recommended Oracle solutions for outage types such as computer failures, storage failures, and human errors.

For detailed information, see:
• Introduction to Backup and Recovery in the *Oracle Database Backup and Recovery User's Guide*
• Using Oracle Enterprise Manager Cloud Control in *Oracle Data Guard Concepts and Administration*
• Oracle Data Guard Broker User Interfaces in *Oracle Data Guard Broker*
• Transporting Tablespaces Between Databases in the *Oracle Database Administrator's Guide*
Database Performance Management

Oracle Enterprise Manager Cloud Control offers a comprehensive database performance management solution, which includes real-time and automatic performance diagnostics and monitoring capabilities.

This solution comes as a part of the Oracle Diagnostics and Oracle Tuning packs, which enable you to identify the problem areas in your database environment and use the tuning capabilities to tune your database’s performance.

The following list provides some of the performance management tasks you can perform:

- Monitor database health and performance, analyze the workloads running against the database, and identify issues.
- Use the Performance Hub to view the Active Session History (ASH) analytics, monitored SQL statement data for a specified time period.
- Detect and diagnose performance issues automatically using Automatic Database Diagnostic Monitor (ADDM).
- Use Automatic Workload Repository (AWR) and automate database statistics gathering by collecting, processing, and maintaining performance statistics for database problem detection and self-tuning purposes.
- Use the following tuning advisors to examine a SQL statement or set of statements and determine how to address issues and optimize database performance:
  - SQL Tuning Advisor
  - SQL Access Advisor
- Use the following Real Application Testing components to perform real-world testing of your Oracle Database:
  - SQL Performance Analyzer
  - Database Replay

For detailed information, see:

- Monitoring and Tuning the Database in *Oracle Database 2 Day DBA*
- *Oracle Database 2 Day + Performance Tuning Guide*
- *Oracle Database SQL Tuning Guide*
- *Oracle Database Testing Guide*
- Oracle Diagnostics Pack in the *Enterprise Manager Cloud Control Licensing Information User Manual*
- Oracle Tuning Pack in the *Enterprise Manager Cloud Control Licensing Information User Manual*
Database Security Management

Oracle Enterprise Manager Cloud Control provides security features to protect data and control how a database is accessed and used.

The following list provides some of the database security tasks you can perform:

- Restrict user access to data using flexible database access control and fine-grained privilege control.
- Manage database users and authorizations in one location using the Enterprise user security feature.
- Use Transparent Data Encryption (TDE) to automatically encrypt data when it is written to the database and automatically decrypt data when accessed.
- Use Oracle Label Security (OLS) to classify data and control access using security labels.
- Use Virtual Private Database (VPD) to enforce data access at the row and column level, using security conditions to protect the data.
- Use Oracle Database Vault for strong security controls to prevent unauthorized access to sensitive information by privileged users and protect against unintended changes to the database.
- Use data redaction to protect data by presenting a masked version of the data to non-privileged users. The masked version of the data preserves the format and referential integrity of the data, so any application that uses the data continues to work as expected.
- Use data masking to replace sensitive data with fictitious yet realistic looking data, and subsetting to downsize either by discarding or extracting data, thereby reduce storage costs.

For detailed information, see:

- Database Security in the Database Lifecycle Management Administrator's Guide
- Introduction to Oracle Advanced Security in the Oracle Database Advanced Security Guide
- Managing Security for a Multitenant Environment in Enterprise Manager in the Oracle Database Security Guide
- Introduction to Oracle Data Masking and Subsetting in the Oracle Database Data Masking and Subsetting Guide
- Oracle Data Masking and Subsetting Pack in the Enterprise Manager Cloud Control Licensing Information User Manual

Database Lifecycle Management

Oracle Enterprise Manager Cloud Control provides a full database lifecycle management solution with its Database Lifecycle Management Pack.
This solution provides complete lifecycle management for Oracle Databases deployed on an on-premises, cloud, or hybrid environment, and includes:

- Automated discovery of assets
- Fleet maintenance for patching and upgrades
- Database configuration and compliance management
- Schema change management
- Hybrid cloud management

For detailed information, see:

- *Enterprise Manager Cloud Control Database Lifecycle Management Administrator’s Guide*
- Database Lifecycle Management Pack for Oracle Database in the *Enterprise Manager Cloud Control Licensing Information User Manual*
- *Enterprise Manager Database Lifecycle Management Pack*

**Middleware Management**

Oracle Enterprise Manager Cloud Control 13c provides a comprehensive management solution for Oracle WebLogic Server, Oracle Fusion Middleware, and non-Oracle middleware technologies. Oracle’s offering encompasses out-of-the-box availability and performance monitoring, robust diagnostics, administration, and lifecycle management that includes configuration and compliance management as well as provisioning and patching across middleware software such as:

- WebLogic Server
- SOA Suite
- Coherence
- Identity Management
- WebCenter
- Web Tier
- Business Intelligence
- Exalogic Elastic Cloud
- Non-Oracle Middleware (for example, JBoss Application Server and IBM WebSphere Application Server)

**Hardware and Virtualization Management**

Oracle Enterprise Manager provides an integrated and cost-effective solution for complete physical and virtual server lifecycle management. By delivering comprehensive provisioning, patching, monitoring, administration, and configuration management capabilities through a web-based user interface, Enterprise Manager significantly reduces the complexity and cost associated with managing Oracle VM, Linux, UNIX, and Windows operating system environments. In addition, enterprises using Oracle Sun hardware can obtain deep insight into their server, storage, and network infrastructure layers and manage thousands of systems in a scalable manner. Oracle Enterprise Manager helps customers to accelerate the adoption of virtualization and cloud computing to optimize IT resources, improve hardware utilization, streamline
IT processes, and reduce costs. Oracle Enterprise Manager is integrated with OVM 3.0 and higher.

Heterogeneous (Non-Oracle) Management

Oracle Enterprise Manager, besides being the best suite of management products for Oracle technologies, also provides a comprehensive solution for the management of heterogeneous data centers (including Microsoft SQL Server and JBoss Application Server) through its rich collection of extensions known as plug-ins and connectors. The Self Update mechanism in Enterprise Manager 13c enables customers to download /import and deploy extensions built by Oracle, Oracle's numerous partners, and customers themselves. These extensions are built upon the same management framework that is used for Oracle products, and therefore provides the same level of stability and richness as the Oracle products.

For more information, see the Oracle Enterprise Manager 13c Extensibility Exchange page:
http://www.oracle.com/goto/emextensibility

Cloud Management

Enterprise cloud presents new management challenges. With a move to virtualization, a top benefit expected from private cloud adoption is cost savings through standardization for operational efficiency. However, without proper management capabilities, expected economic benefits of cloud computing will not be realized.

Oracle Enterprise Manager Cloud Control is Oracle's complete cloud lifecycle management solution. It is the industry's first complete solution including self-service provisioning balanced against centralized, policy-based resource management, integrated chargeback, and capacity planning, and complete visibility of the physical and virtual environment from applications to disk.

For information on:
• Cloud Management packs offered by Oracle Enterprise Manager Cloud Control, see Cloud Management in Enterprise Manager Cloud Control Licensing Information User Manual.
• Enterprise Manager Snap Clone solution, see Enterprise Manager Snap Clone.

Hybrid Cloud Management

With Hybrid Cloud Management, Enterprise Manager Cloud Control provides you with a "single pane of glass" for monitoring and managing on-premise as well as Oracle Cloud deployments, all from the same management console. By deploying Hybrid Cloud Agents onto the Oracle Cloud virtual hosts serving your Oracle Cloud services, you are able to manage Oracle Cloud targets just as you would any other. The communication between Management Agents and your on-premise Oracle Management Service instances is secure from external interference. In addition to a hardened architecture of its own, Enterprise Manager supports the use of additional external HTTP proxies that support tunneling, which can be configured to connect to the Oracle Cloud.

Lifecycle Management

Lifecycle Management is a comprehensive solution that helps database, system, and application administrators automate the processes required to manage the lifecycle of Oracle
technology. It eliminates manual and time-consuming tasks related to discovery, initial provisioning, patching, configuration management, and ongoing change management. In addition, the solution provides compliance frameworks for reporting and managing industry and regulatory compliance standards. Finally, all of the on-premise instrumentation can be connected in real-time to My Oracle Support for complete communication between Oracle and customers.

Application Performance Management

Enterprise Manager 13c provides a complete Application Performance Management (APM) solution for custom applications and Oracle applications (including E-Business Suite, Siebel, PeopleSoft, JD Edwards, and Fusion Applications). The APM solution is designed for both cloud and enterprise data center deployments and is supported on Oracle and non-Oracle platforms.

Oracle APM delivers Business Driven Application Management with end-to-end monitoring that includes:

• User Experience Management: Real user monitoring and synthetic transaction monitoring with Real User Experience Insight (RUEI) and Service Level Management (SLM) beacons, respectively.

There are two ways to monitor Web site user experience: using real traffic from real customers or using synthetic traffic (traffic artificially created by software to mimic the load that the Web site would be expected to receive). RUEI supports monitor of both of these ways. SLM beacons are components within the monitored environment that send out synthetic traffic. Typically, they test the performance and availability of business-critical services in the infrastructure as part of SLM.

• Java monitoring and diagnostics: Zero-overhead, production Java diagnostics for Oracle and non-Oracle platforms. Trace transactions from Java to Oracle Database and back.

• Discovery and topology: Multi-layer discovery of infrastructure and application topology.

• Application Performance Analytics: Rich reporting and analytic capabilities on real user activities and transaction monitoring data.

Application Quality Management

Oracle's Application Quality Management products provide a complete testing solution for Oracle Database, Oracle Packaged Applications, and custom Web applications.

• Infrastructure Testing: Real Application Testing enables realistic, production-scale testing of the database infrastructure. It uses real, production workloads to generate load against databases under test and does not require any script development or maintenance. With Real Application Testing you can reduce your testing time by more than 80%. It provides the most efficient, optimized and highest quality testing for validating database infrastructure changes.

• Test Data Management: Oracle Test Data Management and Data Masking provide efficient, automated, and secure test system creation capabilities for Oracle and non-Oracle databases, with out-of-the-box templates for Oracle packaged applications.
Enterprise Manager Cloud Control Certification Information

This section describes how to obtain information on the products supported by Oracle Enterprise Manager in a release.

1. Sign in to My Oracle Support and click the Certifications tab.
2. In the Certification Search region, select one of the following from the Product list:
   - Enterprise Manager Base Platform - OMS, to view the certification for OMS.
   - Enterprise Manager Base Platform - Agent, to view the certification for Management Agent.
3. From the Release list, select the release you are interested in.
4. Click Search.
New Features In Oracle Enterprise Manager Cloud Control 13c Release 5

This chapter provides an overview of the new features available in Oracle Enterprise Manager Cloud Control 13c Release 5 (13.5) and the subsequent release updates.

The new features are categorized by release update and focus area.

• New Features by Release Update
• New Features by Focus Area

In addition, Oracle Enterprise Manager 13.5 includes all the new capabilities introduced in Oracle Enterprise Manager 13.4, such as:

• Database Migration Workbench
• Oracle Enterprise Manager Federation
• AWR Warehouse Diagnosability
• Support to Monitor Oracle Database Exadata Cloud Service and Oracle Database Exadata Cloud at Customer
• SCAP Compliance Standards
• Fleet Maintenance Single Instance Patching for Windows Deployments
• Oracle Enterprise Manager Mobile
• Oracle Enterprise Manager App for Grafana

For a complete list of all new Oracle Enterprise Manager 13.4 features, see New Features In Oracle Enterprise Manager Cloud Control 13c Release 4.

New Features by Release Update

This section lists new features categorized by release update.

Only information on major enhancements in each Release Update is available in the following sections. For information on all the enhancements available in a Release Update, see the corresponding README file.

• New Features in Oracle Enterprise Manager 13.5 Release Update 4
• New Features in Oracle Enterprise Manager 13.5 Release Update 3
• New Features in Oracle Enterprise Manager 13.5 Release Update 2
• New Features in Oracle Enterprise Manager 13.5 Release Update 1
• New Features in Oracle Enterprise Manager 13.5
New Features in Oracle Enterprise Manager 13.5 Release Update 4

This section lists some of the new features available in Oracle Enterprise Manager 13c Release 5 Update 4 (13.5.0.4).

• Monitor a Database Using a Custom (Non-DBSNMP) User
• Create a Custom Dashboard
• New Compliance Rule Detail Tab
• Pluggable Database Update and Upgrade using Fleet Maintenance UI
• Cloud Pre-Migration Advisor Tool Available for Migration Workbench
• Monitor SI Server Target Using REST APIs
• Use Non-root User Credential for Monitoring SI Server and ZFS Target
• Support for ZDLRA Named Users
• New REST APIs for Onboarding Protected Databases with ZDLRA
• Chargeback for Oracle Cloud Infrastructure

New Features in Oracle Enterprise Manager 13.5 Release Update 3

This section lists some of the new features available in Oracle Enterprise Manager 13c Release 5 Update 3 (13.5.0.3).

• New Out-of-the-Box Dashboards
• Agent Patching UI Enhancements
• New features for Autonomous Databases in Oracle Enterprise Manager
• New EXAchk AHF Compliance Standards
• Enterprise Manager Mobile Features
  – Deep Linking
  – Enhanced Group Filtering
  – Enterprise Manager Dashboards

New Features in Oracle Enterprise Manager 13.5 Release Update 2

This section lists some of the new features available in Oracle Enterprise Manager 13c Release 5 Update 2 (13.5.0.2).

• Oracle Enterprise Manager Dashboards
• Data Distribution Analysis and Visualization for Database Sharding
• Database Scheduler Jobs Metrics
• Support for Multiplex Locations in the clone_database and create_standby_database EMCLI Verbs
• New convert_to Option in the dg_convert_standby EMCLI Verb
• STIG Standards Release 18 for Oracle Database 12c
• Compliance Dashboard Enhancements
• New MTM Metric for Derived Association

New Features in Oracle Enterprise Manager 13.5 Release Update 1

This section lists some of the new features available in Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

• Simplified Agent Patching
• Enterprise Manager Federation Group Filtering
• Security Assertion Markup Language (SAML) Support for Authentication
• Automatic Password Rotation for Non-DBSNMP Users
• Support for Parallelism in the clone_database and create_standby_database EMCLI Verbs
• Copy SQL Tuning Set from an On-premises Database to an Autonomous Database
• ignoreProtectionPolicies Property in ZDLRA Health and Protected Database metrics
• Automatic Detection of Database Role Changes
• Support for Database Backup to OCI Object Storage Using SWIFT Endpoints
• Enhancements and Additions to Sensitive Data Types
• New Fleet Maintenance UI
• Migration Workbench Functionality Enhancement
• Oracle Database 21c Support for Provisioning, Upgrading, and Patching
• CIS Compliance Standards for Oracle Database 19c
• Self Update for Compliance Standards
• New Search Bars for Configuration and Compliance
• Enterprise Manager Mobile Features
  – Group Filtering
  – Share Details
  – Incident Manager Enhancements

New Features in Oracle Enterprise Manager 13.5

This section lists the new features available in Oracle Enterprise Manager 13.5.

• Enhancement to the Software Only Option
• WebLogic Certificates Management
• Improved EM Prerequisite Kit
• Simplified Installation and Reduced Footprint
• Ability to Use Oracle Cloud Infrastructure Services
• Support for REST-based Connectors
• Oracle Enterprise Manager Compliance Standards
New Features by Focus Area

This section lists new features categorized by focus area.

- Installation and Upgrade
- Configuration, Security, and Maintenance
- Enterprise Monitoring
- Database Management
  - Database Lifecycle Management
  - Engineered Systems Management
- Cloud Management
- Enterprise Manager Command Line Interface
- Enterprise Manager Mobile

Installation and Upgrade

This section describes new features and enhancements for Installation and Upgrade.

- **Simplified Agent Patching**: Agent System Patches now consolidate all platform and plug-in patches into a single system patch, thus simplifying patch tracking and deployment.
  For more information, see Agent System Patches in *Enterprise Manager Cloud Control Administrator's Guide*.
  This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

- **Enterprise Manager Federation Group Filtering**: You can now consolidate multiple Enterprise Manager deployments using group filtering.
  For more information, see Configuring Enterprise Manager Federation in *Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide*.
  This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

- **Enhancement to the Software Only Option**: The software only option for the Oracle Enterprise Manager 13c Release 5 Installation and Upgrade process has been enhanced. Oracle Enterprise Manager 13c Release 5 installation wizard now offers the option to perform a software only install or upgrade.
  For more information, see Installing the Enterprise Manager Using the Software-Only Method in *Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide* and Upgrading the OMS and the Management Repository to 13c Release Using the Software-Only Method in Graphical Mode Along With Plug-ins in *Oracle Enterprise Manager Cloud Control Upgrade Guide*.

- **WebLogic Certificates Management**: Oracle Enterprise Manager 13c Release 5 can now carry over the existing custom WebLogic certificates when performing an upgrade.
For more information, see Custom Certificates Configured for OMS and Management Agent Are Reused After Upgrading to Enterprise Manager Cloud Control 13c in Oracle Enterprise Manager Cloud Control Upgrade Guide.

- **Improved EM Prerequisite Kit**: Ensures that your environment meets all the repository requirements during installation or upgrade. These improvements include:
  - Consolidated repository database related checks available in a single pane view
  - Prerequisite check results in HTML format
  - AutoFix option to reduce the manual effort of applying
  - Standalone execution of the prerequisite kit before Installation or Upgrade process
For more information, see Oracle Enterprise Manager Cloud Control Basic Installation Guide, Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide and Oracle Enterprise Manager Cloud Control Upgrade Guide.

- **Simplified Installation and Reduced Footprint**: The reporting framework is now set up outside of the Oracle Enterprise Manager installation, thereby simplifying the installation process. BI Publisher support is replaced with the standalone setup of Oracle Analytics Server (OAS).
For more information, see Standalone Oracle Analytics Server in Oracle Enterprise Manager Cloud Control Administration Guide.

### Configuration, Security, and Maintenance

This section describes new features and enhancements for Configuration, Security, and Maintenance.

- **Security Assertion Markup Language (SAML) Support for Authentication**: You can now configure Oracle Enterprise Manager with SAML, which is an open standard that allows a seamless, single sign-on login.
For more information, see Supported Authentication Schemes in Oracle Enterprise Manager Cloud Control Security Guide.

  This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

### Enterprise Monitoring

This section describes new features and enhancements for Enterprise Monitoring.

- **Monitor a Database Using a Non-DBSNMP User**: Oracle Enterprise Manager now allows non-dbsnmp users as monitoring credentials for discovering and monitoring Oracle Database targets. Previously, only the dbsnmp user could be used as monitoring credentials for monitoring Oracle Database targets.
For more information, see Specifying New Target Monitoring Credentials in Enterprise Manager in Oracle Enterprise Manager Cloud Control Administrator's Guide.

  This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 4 (13.5.0.4).

- **Create a Custom Dashboard**: You can now create a custom dashboard and add Oracle-defined widgets to the dashboard. In addition, you can also add widgets when customizing Out-of-the-Box dashboards.
For more information, see Using Dashboards in Oracle Enterprise Manager Cloud Control Administrator's Guide.
This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 4 (13.5.0.4).

- **New Out-of-the-Box Dashboards**: The following new out-of-the-box dashboards are now available as part of Enterprise Manager dashboards:
  - Federation Summary – By Sites
  - Federation Summary – By Groups
For more information, see Out-of-the-Box Enterprise Manager Dashboards in *Oracle Enterprise Manager Cloud Control Administrator's Guide*.

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 3 (13.5.0.3).

- **Agent Patching UI Enhancements**: The Agents page table has an additional column showing the RU version. The NMO Errors page now indicates whether any agents did not run `root.sh`. For both UI enhancements, the user needs to select the column in order to display the information.
This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 3 (13.5.0.3).

- **Oracle Enterprise Manager Dashboards**: You can now use Enterprise Manager dashboards, which are data visualization tools that gather real-time data from the enterprise and display them in easy-to-interpret widgets. In the initial release, the following out-of-the-box dashboards are available in Enterprise Manager and you can customize these dashboards to meet your requirements:
  - Enterprise Summary
  - Group Summary
For more information, see Using Dashboards in *Oracle Enterprise Manager Cloud Control Administrator's Guide*.

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 2 (13.5.0.2).

- **Automatic Password Rotation for Non-DBSNMP Users**: For users that are not the default monitoring user for database targets, you can use the Change the Password for a Database User job type to automate password rotation.
For more information, see Automate Non-DBSNMP Password Management in *Oracle Enterprise Manager Cloud Control Administrator's Guide*.

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

- **Ability to Use Oracle Cloud Infrastructure Services**: You can now use Oracle Cloud Infrastructure services (Logging Analytics and Operations Insights) against databases within your Oracle Enterprise Manager environment.
For more information, see Using OCI Services with Enterprise Manager in *Oracle Enterprise Manager Cloud Control Administrator's Guide*.

- **Support for REST-based Connectors**: In addition to SOAP, REST is now supported when developing ticketing connectors.
For more information, see Building a Ticketing Connector in *Oracle Enterprise Manager Cloud Control Connectors Integration Guide*.

- **Oracle Enterprise Manager Compliance Standards**: Sizing compliance standard rules are now built into Oracle Enterprise Manager. By default, Enterprise Manager checks the Enterprise Manager repository target against these rules and will send alerts suggesting changes for optimal performance.
For more information, see Compliance Standards in *Oracle Enterprise Manager Cloud Control Administrator’s Guide*.

- **Improved Job System Diagnostics**: Improved Job System Diagnostics Dashboards and ability to drill down into new health metrics such as Health for Jobs, Queues, and Dispatchers.
  For more information, see Diagnosing Job System Issues in *Oracle Enterprise Manager Cloud Control Administrator’s Guide*.

### Database Management

This section describes new features and enhancements for Database Management.

- **New features for Autonomous Databases in Oracle Enterprise Manager**: The following features are now available for Autonomous Databases in Oracle Enterprise Manager:
  - **Cloud Credentials Store**: Enterprise Manager now supports the storing of database user credentials as a database object in an Autonomous Database. The stored credentials can be used to access remote on-premises databases, Autonomous Databases, or Oracle Cloud Infrastructure Object Storage.
  - **Directory Objects**: You can now view the default and custom-created directories in an Autonomous Database on the **Directory Objects** page. In addition, you can also create directory objects and transfer files from the directory to the Object Storage and from the Object Storage to the directory.
  - **Database Links**: You can now create a database link from Autonomous Databases – Shared discovered in Enterprise Manager to a target database. Database links enable you to access objects and perform operations on the target database.
  - **Backup and Recovery Management and Monitoring of Autonomous Databases**: You can now view the list of backups for an Autonomous Database, schedule an on-demand backup, and restore the database from a backup. To go to the **Backups** page, from the **Availability** menu on the Home page of the Autonomous Database, select **Backups**.
  
  As a prerequisite to using this feature, the `OCI_OCID` and `OCI_REGION` target properties must be set manually for the Autonomous Database target. To do so, you can use the following EMCLI commands:

```
emcli set_target_property_value
    -property_records=<tn>:<tt>:oci_ocid:<value>

emcli set_target_property_value
    -property_records=<tn>:<tt>:oci_region:<value>
```

(tn=targetName, tt=targetType)

For more information on **Cloud Credentials Store**, **Directory Objects**, and **Database Links**, see Monitoring and Administration Tasks in *Oracle Enterprise Manager Cloud Control Administrator’s Guide for Oracle Autonomous Databases*.

These features are available starting with Oracle Enterprise Manager 13c Release 5 Update 3 (13.5.0.3).
• **Data Distribution Analysis and Visualization for Database Sharding:** An advanced analysis of data distribution across shards within a sharded database is now available using Sharded Database metrics. This includes the following features:
  – Ranking or visualization of shards by various size parameters, such as data size and number of unique keys.
  – Identification of “hot” shards based on throughput.
  – Visualization of size or load grouped within or across the following:
    * Shardgroup
    * Data Guard configuration
  – Search capability to find a shard with a specific key.
  – Individual shard-level drill down by chunks.

For more information, see Sharded Database in *Oracle Enterprise Manager Oracle Database Plug-in Metric Reference Manual.*

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 2 (13.5.0.2).

• **Database Scheduler Jobs Metrics:** You can now view Database Scheduler Jobs metrics, which report the current status of DBMS jobs registered through the DBMS_SCHEDULER interface. Using these metrics, you can monitor long running jobs and obtain alerts on individual jobs.

For more information, see **Database Scheduler Jobs** in *Oracle Enterprise Manager Oracle Database Plug-in Metric Reference Manual.*

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 2 (13.5.0.2).

• **Support for Multiplex Locations in the clone_database and create_standby_database EMCLI Verbs:** The multiplex_locs option has now been added to the `clone_database` and `create_standby_database` EMCLI verbs to support multiplex locations. Using this option, you can specify multiplex locations for the redo logs and control files.

For more information, see `clone_database` and `create_standby_database` in *Oracle Enterprise Manager Command Line Interface.*

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 2 (13.5.0.2).

• **New convert_to option in the dg_convert_standby EMCLI Verb:**

Using this option, you can specify the role the standby database will be converted to.

For more information, see `dg_convert_standby` in *Oracle Enterprise Manager Command Line Interface.*

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 2 (13.5.0.2).

• **Support for Parallelism in the clone_database and create_standby_database EMCLI Verbs:** The -degree_of_parallelism option has now been added to the `clone_database` and `create_standby_database` EMCLI verbs to support parallelism. Using this option, you can specify the number of parallel channels used by RMAN to copy the database files.
For more information, see clone_database and create_standby_database in Oracle Enterprise Manager Command Line Interface.

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

**Copy SQL Tuning Set from an On-premises Database to an Autonomous Database:**
You can now copy a SQL Tuning Set from an on-premises database discovered in Oracle Enterprise Manager to an Autonomous Database discovered in Oracle Enterprise Manager.
For more information, see the Copying a SQL Tuning Set from an On-premises Database to an Autonomous Database tutorial.

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

**ignoreProtectionPolicies Property in ZDLRA Health and Protected Database metrics:** You can use the ignoreProtectionPolicies property on a Health or Protected Databases metric to ignore the incidents generated against the databases associated with a specific protection policy.
For more information, see Recovery Appliance in Oracle Enterprise Manager Oracle Database Plug-in Metric Reference Manual.

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

**Automatic Detection of Database Role Changes:** Oracle Enterprise Manager now has the ability to automatically detect any database role changes that might have occurred in an Oracle Data Guard configuration, irrespective of where and how these changes were initiated. All detected role changes will trigger a recompute of the required dynamic properties and ensure that all metrics and attributes for the databases in this Data Guard configuration are synchronized. If it’s detected that a Fast-Start Failover (FSFO) has occurred, an alert is raised in Oracle Enterprise Manager.
This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

**Support for Database Backup to OCI Object Storage Using SWIFT Endpoints:**
Oracle Enterprise Manager now supports backing up a database to Oracle Cloud Infrastructure Object Storage by leveraging the SWIFT endpoints. You will need to provide the SWIFT endpoint, credentials and Object Storage bucket information to configure the backup.
This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

**Enhancements and Additions to Sensitive Data Types:** Oracle Data Masking and Subsetting Pack provides a comprehensive solution to manage secure production data for test and development environments. The sensitive data is identified through sensitive data discovery, where you can define search patterns specific to your business. You can also leverage the sensitive types that are available out-of-the-box. The pre-defined types that were updated include:

- Credit Card Number
- Email ID
- IP Address
- ISBN_10
- ISBN_13
- National Insurance Number
Additionally, the following new types are now supported:

- Age
- Card Expiration Date
- Card Security Code
- Card Security PIN
- Date of Birth
- Ethnicity
- First Name
- Full Name
- Gender
- India Aadhaar Number
- India PAN
- Last Name
- MAC Address
- Mexico CURP Code
- Place of Birth
- Postal Code
- Race
- Religion
- Sexual Orientation

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

Database Lifecycle Management

This section describes new features and enhancements for Database Lifecycle Management.

- **New Compliance Rule Detail Tab:** The Compliance Framework Evaluation Results section introduces a new Rule Details tab that provides a detailed summary of a given rule, its severity, the rule state (for example, Production or Test), a description, rationale and recommendations. For more information, see View Compliance Framework Evaluation Results in Oracle Enterprise Manager Cloud Control Database Lifecycle Management Administrator's Guide.

  This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 4 (13.5.0.4).
• **Pluggable Database Update and Upgrade using Fleet Maintenance UI:** Pluggable Database (PDB) updating and upgrading is now supported using the Fleet Maintenance user interface. Users can now select individual or multiple PDB targets to be patched, updated, or upgraded and they can either attach it to an existing Container Database (CDB) or deploy to a brand new CDB. For more information, see *Patching an Oracle Pluggable Database Using Oracle Enterprise Manager's Fleet Maintenance Graphic User Interface and Fleet Maintenance UI Operations in Oracle Enterprise Manager Cloud Control Database Lifecycle Management Administrator's Guide.*

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 4 (13.5.0.4).

• **Cloud Pre-Migration Advisor Tool available for Migration Workbench:** The Database Migration Workbench now takes advantage of the Cloud Pre-Migration Advisor Tool (CPAT) used by other Oracle products in pre-migration activities. CPAT connects to an Oracle database instance and performs a series of checks designed to ensure a successful migration. CPAT generates a report and its results are consumed by the Database Migration Workbench. CPAT replaces the Schema Advisor used in prior versions to perform source database analysis. For more information, see *Migrate Using Database Migration Workbench in Oracle Enterprise Manager Cloud Control Database Lifecycle Management Administrator's Guide.*

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 4 (13.5.0.4).

• **EXAchk AHF Compliance Standards:** Oracle Enterprise Manager 13c Release 5 Update 3 (13.5.0.3) integrates Oracle Autonomous Health Framework (AHF) EXAchk for Exadata Engineered Systems X8 and X8M. Oracle EXAchk is a lightweight and non-intrusive health check framework for the stack of software and hardware components in Exadata. Enterprise Manager provides a set of compliance standards and associated controls for overall health monitoring, automated risk identifications and proactive notification of issues for each Exadata System component and database instances. For more information, see *AHF EXAchk Compliance Standards in Oracle Enterprise Manager Cloud Control Oracle Compliance Standards Reference.*

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 3 (13.5.0.3).

• **STIG Standards Release 18 for Oracle Database 12c:** The latest STIG standards for Oracle Database 12c are now available via the new *Self Update* option and the traditional Configuration and Compliance standard options. For more information, see *About Security Technical Implementation Guide in Oracle Enterprise Manager Cloud Control Oracle Compliance Standards Reference.*

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 2 (13.5.0.2).

• **Compliance Dashboard Enhancements:** In the Compliance Dashboard you can now filter by the Life Cycle metadata property, allowing you to filter compliance violations for Mission Critical, Production, Stage, Test and Development values. For more information, see *About the Compliance Dashboard in Oracle Enterprise Manager Cloud Control Database Lifecycle Management Administrator’s Guide.*

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 2 (13.5.0.2).

• **New MTM Metric for Derived Association:** This new metric scans all target and report derived associations of more than 5 seconds.
For more information, see Derived Associations Taking More Than 5 Seconds in *Enterprise Manager Cloud Control Framework, Host, and Services Metric Reference Manual*.

This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 2 (13.5.0.2).

- **New Fleet Maintenance UI:** You can now perform Fleet Maintenance tasks from the Enterprise Manager User Interface page using a simple intuitive process that guides you through setting up and performing Fleet Maintenance tasks for your Oracle Database targets. For more information, see Fleet Maintenance UI Operations in *Oracle Enterprise Manager Cloud Control Database Lifecycle Management Administrator’s Guide*.

  This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

- **Migration Workbench Functionality Enhancement:** The Migration Workbench has been enhanced to support new destination targets. With this, on-premises databases and schema can now be migrated to:
  - On-Premises database, to either existing or new PDBs
  - Exadata, and across platforms
  - DBCS (ExaCC, ExaCS, Bare Metal, VM)
  - Autonomous Databases

  For more information, see Migrate Using Database Migration Workbench in *Oracle Enterprise Manager Cloud Control Database Lifecycle Management Administrator’s Guide*.

  This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

- **Oracle Database 21c Support for Provisioning, Upgrading, and Patching:** You can now Provision and Upgrade your databases to Oracle Database 21c. Fleet Maintenance activities can also be performed to Update and Patch database deployments up to 21c.

  For more information, see Database Provisioning and Database Fleet Maintenance in *Oracle Enterprise Manager Cloud Control Database Lifecycle Management Administrator’s Guide*.

  This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

- **CIS Compliance Standards for Oracle Database 19c:** The latest CIS Compliance standards for Oracle Database 19c are now available. These standards are available via the new **Self Update** and traditional Configuration and Compliance standards options.

  For more information, see About CIS Compliance Standards in *Oracle Enterprise Manager Cloud Control Oracle Compliance Standards Reference*.

  This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

- **Self Update for Compliance Standards:** Compliance Standards are now available via **Self Update**. This allows you to obtain new and updated standards whenever they become available outside of minor and major Oracle Enterprise Manager releases. Standards can be accessed via the **Self Update** home page, a common dashboard used to obtain information about new updates and a common workflow to review, download, and apply updates.
For more information, see Self Update for Compliance Standards in *Oracle Enterprise Manager Cloud Control Database Lifecycle Management Administrator's Guide*. This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

**New Search Bars for Configuration and Compliance:** Configuration and Compliance features two new search bars making deployment search much faster and easier. These new search bars are located in the Compliance Library under Deployments and in the Configuration Extensions under Deployments. For more information, see Evaluate Compliance in *Oracle Enterprise Manager Cloud Control Database Lifecycle Management Administrator's Guide*. This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 1 (13.5.0.1).

### Engineered Systems Management

This section describes new features and enhancements for Engineered Systems Management.

- **Monitor SI Server Target Using REST APIs:** After performing an Exadata 12c to 13c target type conversion, you can now monitor a Systems Infrastructure Server target using REST APIs. This is applicable only for ILOM version 5.0.1 and above. This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 4 (13.5.0.4).

- **Use Non-root User Credential for Monitoring SI Server and ZFS Target:** A System Infrastructure Server target or ZFS target can now be monitored using a non-root user. You can simply create a new user in the ILOM shell, or using the ZFS Console, and use it for discovery or as a monitoring credential. Note that the SNMP user creation and SNMP subscription will need manual changes in order for the SNMP alerts to be processed. For more information, see Using Oracle ZFS Storage Appliance in Engineered Systems and Get Started With Server Management in *Oracle Enterprise Manager Cloud Control Administrator's Guide*. This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 4 (13.5.0.4).

- **Support for ZDLRA Named Users:** Oracle Enterprise Manager supports using ZDLRA named users with either the ADMIN or MONITOR role to discover and manage the Recovery Appliance. ZDLRA 21.1 introduced this concept of named administrative users to manage day-to-day ZDLRA administrative activities. This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 4 (13.5.0.4).

- **New REST APIs for Onboarding Protected Databases with ZDLRA:** The ZDLRA plug-in in Oracle Enterprise Manager now supports new REST APIs to onboard protected databases with the Recovery Appliance. These REST APIs can be used to onboard a fleet of databases with one or more Recovery Appliances. This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 4 (13.5.0.4).

### Cloud Management

This section describes new features and enhancements for Cloud Management.
• **Chargeback for Oracle Cloud Infrastructure (OCI):** Chargeback allows you to divide the cost of OCI entities and charge internal customers based on their respective usage.
For more information, see Chargeback for Oracle Cloud Infrastructure in Oracle Enterprise Manager Cloud Control Cloud Administration Guide.
This feature is available starting with Oracle Enterprise Manager 13c Release 5 Update 4 (13.5.0.4).

Enterprise Manager Command Line Interface

This section lists the new or updated Enterprise Manager Command Line Interface (EM CLI) commands.

• **New verb cleanup_cs_target_associations:** This is a new verb for Configuration and Compliance that removes failed or pending target associations for a given compliance standard.
For more information, see cleanup_cs_target_associations in Oracle Enterprise Manager Command Line Interface.

Enterprise Manager Mobile

Oracle Enterprise Manager Mobile can now be downloaded from the App Store® for Apple mobile devices and from Google Play for Android mobile devices.

• **Deep Linking:** Notifications sent by Oracle Enterprise Manager can now have embedded contextual links that directly access the Enterprise Manager Mobile management/monitoring functionality.
For more information, see Direct Access to Monitoring/Management Functions from Enterprise Manager Notifications in Help for Enterprise Manager Mobile.
This feature is available starting with Enterprise Manager Mobile version 1.4.

• **Enhanced Group Filtering:** You can now view group members from the target detail screen as a flattened hierarchy or direct members only.
For more information, see Group Membership Filtering in Help for Enterprise Manager Mobile.
This feature is available starting with Enterprise Manager Mobile version 1.4.

• **Enterprise Manager Dashboards:** Enterprise Manager out-of-box and custom dashboards are now available from within Enterprise Manager Mobile.
For more information, see Access Enterprise Manager Dashboards in Help for Enterprise Manager Mobile.
This feature is available starting with Enterprise Manager Mobile version 1.4.

• **Group Filtering:** Filtering by group context lets you create a federated view of Oracle Enterprise Manager. A federated view allows you to create a single group where you can manage incidents/problems/jobs across multiple Enterprise Manager installations.
For more information, see View Federated Enterprise Manager in Help for Enterprise Manager Mobile.
This feature is available starting with Enterprise Manager Mobile version 1.3.

• **Share Details:** Enterprise Manager Mobile lets you share the content of any page with other administrators using the native share functionality of your mobile device.
For more information, see Share Details via Text or Email in Help for Enterprise Manager Mobile.

This feature is available starting with Enterprise Manager Mobile version 1.3.

- **Incident Manager Enhancements**: Incident Manager now allows you to show custom views by category and views shared by other administrators. You can now filter a list of issues (incidents, problems, and events) using a custom date range that overrides the view definition date range.
  For more information, see Manage Incidents in Help for Enterprise Manager Mobile.

This feature is available starting with Enterprise Manager Mobile version 1.3.
# Index

<table>
<thead>
<tr>
<th>A</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>architecture, 1-2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Certification Information, 1-15</td>
<td></td>
</tr>
<tr>
<td>Cloud Control console, 1-1, 1-6</td>
<td></td>
</tr>
<tr>
<td>Cloud Management New Features, 2-13</td>
<td></td>
</tr>
<tr>
<td>Configuration, Security, and Maintenance New Features, 2-5</td>
<td></td>
</tr>
<tr>
<td>core components, 1-2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Lifecycle Management New Features, 2-10</td>
<td></td>
</tr>
<tr>
<td>Database Management New Features, 2-7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineered Systems Management New Features, 2-13</td>
<td></td>
</tr>
<tr>
<td>Enterprise Manager Cloud Control architecture, 1-2</td>
<td></td>
</tr>
<tr>
<td>core components, 1-2</td>
<td></td>
</tr>
<tr>
<td>description, 1-1</td>
<td></td>
</tr>
<tr>
<td>load balancer, 1-3</td>
<td></td>
</tr>
<tr>
<td>Enterprise Manager Mobile, 2-14</td>
<td></td>
</tr>
<tr>
<td>Enterprise Monitoring New Features, 2-5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation and Upgrade New Features, 2-4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>load balancer, 1-3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>managed host, 1-3</td>
<td></td>
</tr>
<tr>
<td>Management Agents, 1-4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>New Features in Oracle Enterprise Manager 13.5, 2-3</td>
<td></td>
</tr>
<tr>
<td>New Features in Oracle Enterprise Manager 13.5 Release Update 1, 2-3</td>
<td></td>
</tr>
<tr>
<td>New Features in Oracle Enterprise Manager 13.5 Release Update 2, 2-2</td>
<td></td>
</tr>
<tr>
<td>New Features in Oracle Enterprise Manager 13.5 Release Update 3, 2-2</td>
<td></td>
</tr>
<tr>
<td>New Features in Oracle Enterprise Manager 13.5 Release Update 4, 2-2</td>
<td></td>
</tr>
<tr>
<td>New or Updated EM CLI commands, 2-14</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>O</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OMS, 1-4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>plug-ins deployment, 1-4</td>
<td></td>
</tr>
<tr>
<td>mandatory plug-ins, 1-5</td>
<td></td>
</tr>
<tr>
<td>monitoring, 1-4</td>
<td></td>
</tr>
<tr>
<td>optional plug-ins, 1-5</td>
<td></td>
</tr>
<tr>
<td>pluggable entities, 1-4</td>
<td></td>
</tr>
<tr>
<td>release cycles, 1-4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>storage location, 1-4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>unmanaged host, 1-3</td>
<td></td>
</tr>
</tbody>
</table>