

# Oracle® Enterprise Manager Cloud Control Introduction



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# 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.

Note that later versions of this book and other Enterprise Manager books may be available on the Oracle Help Center:

<http://docs.oracle.com/en/enterprise-manager/>

## 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

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## Structure

The book consists of the following chapters:

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

Presents the Enterprise Manager Cloud Control architecture and briefly describes the key features of the product.

### **New Features In Oracle Enterprise Manager Cloud Control 13c**

Highlights the new features available in Oracle Enterprise Manager Cloud Control 13c.

## Conventions

The following text conventions are used in this document:

<b>Convention</b>	<b>Meaning</b>
<b>boldface</b>	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

# 1

## 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](#)

### About Enterprise Manager Cloud Control 13c

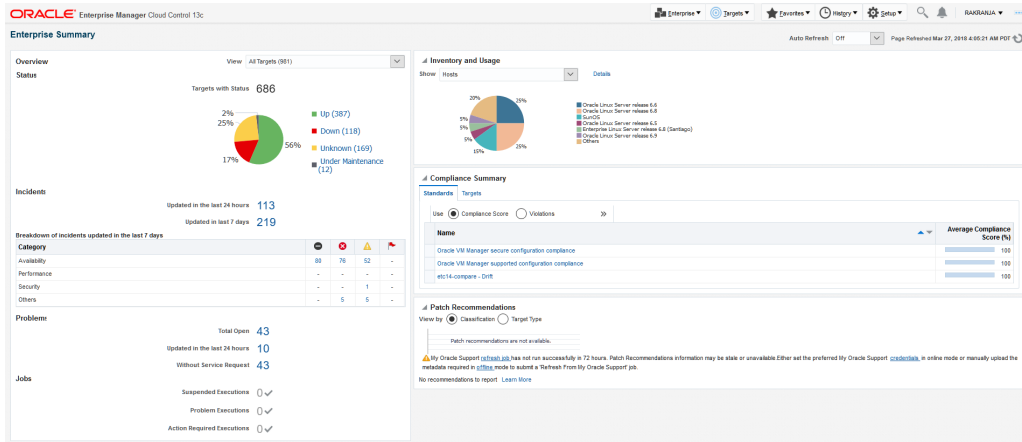
Oracle Enterprise Manager is Oracle's integrated enterprise information technology (IT) management product line, which provides the industry's only complete, integrated, and business-driven enterprise cloud management solution. Oracle Enterprise Manager creates business value for IT by leveraging the 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.

**Figure 1-1 Enterprise Manager Cloud Control Console**



For more information, see [Enterprise Manager Cloud Control](#).

## 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 JVM Engine](#)
- [About Oracle BI Publisher](#)
- [About Enterprise Manager Cloud Control Console](#)
- [About EMCTL](#)
- [About EM CLI](#)

## Architecture of Enterprise Manager Cloud Control

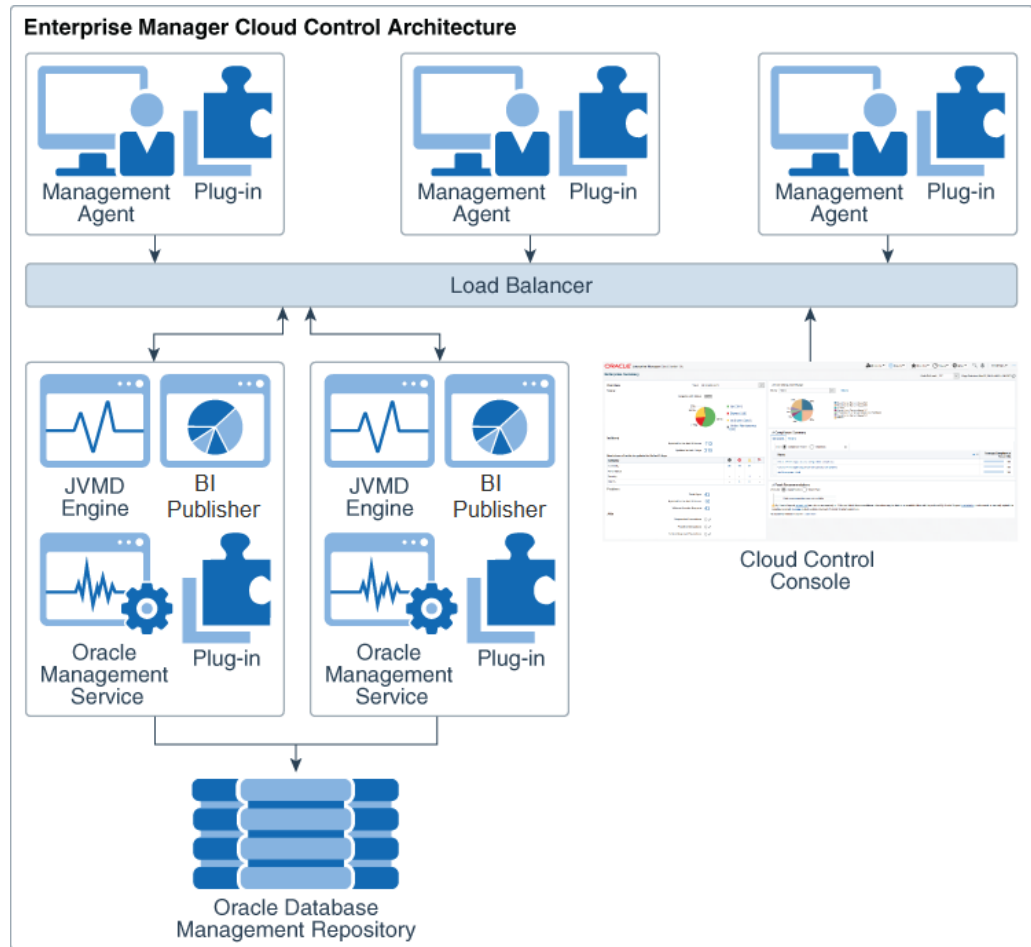
Enterprise Manager Cloud Control includes the following components:

- 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**

Name	Description
Oracle Database	Enables you to discover, monitor, and manage Oracle Database and related targets such as Oracle Real Application Clusters (Oracle RAC), Oracle Automatic Storage Management (Oracle ASM), and so on.
Oracle Fusion Middleware	Enables you to discover, monitor, and manage Oracle Fusion Middleware products such as Oracle WebLogic Domain, Oracle WebLogic AdminServer, Oracle WebLogic Server, Oracle SOA Suite, Oracle Web Tier, and so on.
Oracle Exadata	Enables you to discover, monitor, and manage Oracle Exadata targets.
Oracle Cloud Framework	Enables you to access basic features that are common across cloud services such as Middleware as a Service (MWaaS), Database as a Service (DBaaS), Infrastructure as a Service (IaaS), and Testing as a Service (TaaS).
Oracle System Infrastructure	Enables you to discover, monitor, and manage Oracle hardware systems and Super Cluster engineered systems, including server hardware, chassis, racks, power distribution unit, network equipment, operating systems, virtualization software, and clustering software.

## About Oracle JVMMD 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 Plug-in deployment, one JVMMD Engine is installed and configured by default on the OMS. For every additional OMS you deploy, you receive one JVMMD Engine by default with that OMS.

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

## About Oracle BI Publisher

Oracle Business Intelligence (BI) Publisher is Oracle's primary reporting tool for authoring, managing, and delivering all your highly formatted documents. Oracle BI Publisher makes your data stand out with pixel-perfect reports and dashboards, offers a variety of report and dashboard layouts, and enables you to create all types of highly formatted documents.

Starting with Oracle Enterprise Manager 13c, Oracle BI Publisher is installed and configured by default on the OMS. For every additional OMS you deploy, you receive one Oracle BI Publisher by default with that OMS.

## 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 programmatically. 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. Capabilities such as JVM Diagnostics (JVMD) and others are also available.

## Database Management

Oracle revolutionized the field of enterprise database management systems with the release of Oracle Database 10g by introducing the industry's first self-management capabilities built right into the database kernel. Today, after several releases and continuous improvement of this intelligent management infrastructure, Oracle Database provides the most extensive self-management capabilities in the industry, ranging from zero-overhead instrumentation to integrated self-healing and business-driven management. Oracle's Database management capabilities make the lives of DBA's easier by providing a full-lifecycle solution encompassing the following:

- Change and Configuration Management
- Patching and Upgrades
- Provisioning
- Testing
- Masking and Subsetting

- Performance Management
- Automatic Tuning

In addition, Oracle Enterprise Manager Cloud Control includes the following database management capabilities:

- Provides problem detection and guided resolution work flows
- Enables you to perform day to day tasks from Enterprise Manager Cloud Control
- Enables you to run repetitive jobs from Enterprise Manager Cloud Control

## 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
- Oracle GlassFish
- 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 and Oracle Virtual Assembly Builder.

## 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.

## 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.

- Application Testing: Application Testing Suite's Test Management, Functional Testing, and Load Testing capabilities ensure the quality of web-based applications including Oracle e-Business Suite, Fusion, Siebel, PeopleSoft, Hyperion, and J.D. Edwards.
- Infrastructure Testing: Application Replay and Real Application Testing enable realistic, production-scale testing of the application and database infrastructure. They use real, production workloads to generate load against applications or databases under test and do not require any script development or maintenance. With Application Replay or Real Application Testing you can reduce your testing time by more than 80%. They provide the most efficient, optimized and highest quality testing for validating application and 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.



# 2

## New Features In Oracle Enterprise Manager Cloud Control 13c

This chapter provides an overview of the new features available in Oracle Enterprise Manager Cloud Control 13c. It lists new features specifically associated with the base Oracle Enterprise Manager platform which includes the Cloud Control console, Oracle Management Service, and Oracle Management Agents.

This chapter contains the following sections:

- [Framework and Infrastructure](#)
- [Middleware Management](#)
- [Cloud Management](#)
- [Database Management](#)
- [Oracle Linux Host Administration](#)

### Framework and Infrastructure

This section describes new features and enhancements for Enterprise Manager Framework and Infrastructure.

- [Support for Customization of Enterprise Manager Login Page](#)

### Support for Customization of Enterprise Manager Login Page

The Enterprise Manager login page can be customized in order to accommodate corporate policies and standards.

- A logo can be placed on the upper left corner of the **Enterprise Manager** login page.
- A **License Agreement** pop-up message can be configured to appear after user clicks on the **Login** button. The license agreement message, pop-up title, and button labels can be customized by using new *emctl* properties.
- A customized informational text can be placed to the left of the login fields. Some use cases for informational text include instructions to apply for access, password reset policy, and instructions for assistance.

For more information, see [Support for Customization of Enterprise Manager Login Page](#) in the *Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide*.

### Middleware Management

This section describes new features and enhancements for middleware management.

- [Fusion Middleware Plug-in \(13.3.1.0\) Features](#)
- [JVMD \(13.3.1.0\) Features](#)

## Fusion Middleware Plug-in (13.3.1.0) Features

This section describes new features and enhancements included in the Fusion Middleware Plug-in (13.3.1.0):

- [Enhancements to Oracle Fusion Middleware Process Control](#)
- [Configure Success and/or Failure Strings in Web Service Tests](#)
- [Oracle Identity Management 12.2.x Management](#)
- [Support for Cloning of SOA or OSB-based Domains Versioned 12.2.1.3 and later](#)

### Enhancements to Oracle Fusion Middleware Process Control

Beginning with Fusion Middleware Plug-in Release 13.3, the following enhancements to Oracle Fusion Middleware process control operations enable administrators to:

- Start up or shut down managed servers while the administration server is down. In prior releases, this was not supported.
- Start up the administration server through node manager. In prior releases, administrators could only start the target through the default script or a custom script.
- Start up or shut down a subset of the domain. In prior releases, when administrators chose to start up or shut down a domain, the domain and all its members were started or stopped; there was no granularity as to which members of the domain to take action against.
- Create or end a notification blackout when shutting down or starting up Oracle Fusion Middleware software. In prior releases, administrators were only able to create or end a traditional blackout when controlling processes.

Being able to increase the flexibility in controlling Oracle Fusion Middleware processes directly from Cloud Control helps the administration team be more efficient and effective in managing their middleware environment.

### Configure Success and/or Failure Strings in Web Service Tests

When creating a service test of the Web Service (SOAP/Rest) test type, administrators can now validate the response of the test by specifying success and/or failure strings. A transaction is considered up if each success string appears at least once within the transaction and a transaction is considered down if any failure string appears within the transaction.

Having such configuration abilities for the Web Service test type prevents Oracle Enterprise Manager from reporting an incorrect status of the test and service.

### Oracle Identity Management 12.2.x Management

Beginning with Fusion Middleware Plug-in 13.3, administrators are able to discover and centrally manage their Oracle Identity Management version 12.2.x deployments.

The following components are supported in Enterprise Manager 13.3 for Identity Management 12.2.x

- Oracle Identity Governance (also known as Oracle Identity Manager)
- Oracle Access Management (also known as Oracle Access Manager)
- Oracle Directory Integration Platform
- Oracle Internet Directory

 **Note:**

Oracle Unified Directory release 12.2 (its discovery and management requires the Oracle Unified Directory Plug-in) is also supported in Enterprise Manager Cloud Control 13.3. This was initially supported with Enterprise Manager Cloud Control 13.2 so is not included as a new feature in 13.3. Discovering and managing the other IDM 12.2 components listed above require the Fusion Middleware Plug-in.

The existing management features continue to be supported with Oracle Identity Management version 12.2.x, including:

- Performance monitoring and diagnostics
- Configuration management
- Process control

So after upgrading to the latest version of Oracle Identity Management software, you can continue to leverage Oracle Enterprise Manager Cloud Control 13c for centralized monitoring and management alongside the other targets in your enterprise.

 **Note:**

Using Oracle Enterprise Manager Cloud Control to apply patches to Oracle Identity Management Release 12c components is not supported.

## Support for Cloning of SOA or OSB-based Domains Versioned 12.2.1.3 and later

Beginning with Fusion Middleware Plug-in Release 13.3, administrators are able to create provisioning profiles based on SOA or OSB domains versioned 12.2.1.3 and later. Administrators can also perform cloning from these profiles.

## JVMD (13.3.1.0) Features

Following are the new features and enhancements for JVMD:

- Request metrics based on all executed instances (sampled instances only): Prior to this release, Request metrics for example, count, allocation, and duration were calculated based on the data collected for the specific instances that were “caught” while taking a sample of the stuck. Starting with this release, the metrics are

calculated based on all the instances that were executed since the previous sampling.

For example, a Request average execution time varies from 50 to 1500ms, while the average execution time is 100ms. The request is executed 1000 times per second.

Sampling will “catch” mainly the slow executions. The sampled count will be much smaller than 1000/s and the average execution time and other metrics will reflect the behavior of the “caught” slow executions. With the new feature introduced in 13.3, all the Request executions are counted and measured. In the example above, the count will show 100/s and the average will be 100ms.

Both the sampled based metrics and the actual measurement are presented to the user.

 **Note:**

- The ‘Thread state’ and ‘JVM Time’ metrics are available only as sampled data.
  - Requests that are not sample at all (not even one instance is caught while JVMD takes the thread execution sample) will not show at all at that time period.
- Deploy agent in off mode: User can opt to deploy an agent, but the agent will not report data to EM until specifically enabled (through UI or emcli).
  - Agent deployed through the Agent Deployment wizard (for WebLogic) can be selected to be deployed on cluster level, enabling dynamic targeting to future managed servers in this cluster.
  - Allows to specify LIBDIR at time of agent deployment.
  - emcli support (for JVM and JVM Pools):
    - Configure Heap/JFR Dump Directory
    - Enable/disable monitoring
    - Change log level
    - Enable/disable Byte Code Instrumentation
  - Improvements to DB requests data collection: Higher percentage of the SQL invocations will be captured.
  - Call tree view enhancements:
    - Optional view in method level (in addition to the code line level)
    - Auto expand option to reveal the significant code path

## Cloud Management

This section describes new features and enhancements for cloud management.

- [Virtual Infrastructure Plug-in \(13.3\)](#)
- [Database as a Service](#)

## Virtual Infrastructure Plug-in (13.3)

The Virtual Infrastructure Plug-in (13.3) works seamlessly with Oracle's latest server virtualization product, Oracle VM Release 3.4.

Oracle VM is an enterprise-class server virtualization solution comprised of Oracle VM Server for x86, Oracle VM Server for SPARC, and Oracle VM Manager. Oracle engineered the Oracle VM server virtualization and management solution to address the market segments of private cloud infrastructure within a corporate data center, or at a hosting site (managed cloud services) as well as cloud service providers. Oracle VM enables virtual machines to be deployed, managed, and moved throughout Oracle's public and private cloud infrastructure.

Oracle VM Release 3.4 delivers many important features and enhancements to enable rapid enterprise application deployment. The entire Oracle VM environment can be managed from within Oracle Enterprise Manager. In addition, Oracle Enterprise Manager offers extended functionality beyond that of Oracle VM.

For more information, see the following sections:

- Managing Plug-Ins in the *Oracle Enterprise Manager Cloud Control Administrator's Guide*
- Verifying or Installing the Virtual Infrastructure (VI) Plug-in in the *Oracle Enterprise Manager Cloud Administration Guide*

## Database as a Service

Beginning with 13.3, the following enhancements have been made to Oracle DBaaS:

- Database as a Service support for database 18c and 19c including support for relocation and clone refresh.
- Pluggable Database Instance Resize.
- Self Service Application (SSA) User Data Profile will enable SSA users to preserve a Pluggable Database backup before instance deletion.
- Self Service Application(SSA) User Data Profile will enable SSA users to create new Pluggable Database instance using a Pluggable Database backup.
- Enhanced CPU and memory resource management for Pluggable Database version 12.2 and above.
- SSA User driven Data Guard Switchover for Database Service.
- Database/Pluggable Database Onboarding on DBaaS Cloud for easy accessibility of existing DB instances from Self Service Portal.
- Database/Pluggable Database relocation across cloud pools.
- Pluggable Database Upgrade using Fleet Maintenance.
- Container Database provisioning from Self Service Portal.

For more information, see the following sections in the *Oracle Enterprise Manager Cloud Administration Guide*:

- DB Onboarding on DBaaS Cloud
- DB Relocation

- PDB Onboarding on DBaaS Cloud
- PDB Relocation
- PDB Instance Resize
- PDB Upgrade using Fleet Maintenance
- Creation of SSA User Data Profile for Pluggable Database
- Pluggable Database creation using SSA User Data Profile
- Pluggable Database Profile EM CLI Verbs
- Pluggable Database Profile REST API Examples

## Database Management

This section describes new features and enhancements for database management:

- Lifecycle management of database 18c and 19c including support for provisioning, patching, and upgrade from earlier versions.
- Database Fleet Maintenance REST API support for Gold Image lifecycle management operations such as creation, deletion, and DB target subscription.

 **Note:**

From the 12.2 release, classic patching using Lifecycle Management Graphical User Interface is deprecated. You must use the Database Fleet Maintenance feature to patch 12.2 databases and GI environments.

- Fleet Maintenance pre and post scripts will enable end-to-end automation of environment specific maintenance activities.

### Oracle Exadata Plug-in

For detailed information on new features and enhancements, see Features and Enhancements for Oracle Exadata Plug-in in the *Oracle Exadata Database Machine Getting Started Guide*.

### Oracle Database Plug-in (13.3.2)

- JET is the default UI for all Database Performance pages. The Flash pages are now deprecated and the JET pages are the recommended and supported way to access database performance data.

For more information, see Doc IDs 2422790.1, 2580832.1, and 2580773.1 in [My Oracle Support](#).

- Oracle Enterprise Manager Support for Autonomous Transaction Processing – Dedicated database: You can now use Oracle Enterprise Manager to discover, manage, and monitor Autonomous Transaction Processing – Dedicated databases.

For more information, see Use Oracle Enterprise Manager for Autonomous Databases in the *Oracle Enterprise Manager Cloud Control Administrator's Guide for Oracle Autonomous Databases*.

- Support for Pluggable Database (PDB) Administrator role for segregation of duty: You can now create Administrators for PDBs and assign privileges based on the tasks the PDB Administrator must perform. These granular privileges control access and allow administrators to better segregate their duties.  
For more information, see Doc ID 2628573.1 in [My Oracle Support](#).
- Support for the following Security Technical Implementation Guides (STIGs) for Oracle Database versions:
  - Oracle 12c Database STIG – Version 1, Release 10
  - Oracle 11.2g Database STIG – Version 1, Release 13
- Zero Data Loss Recovery Appliance (ZDLRA) enhancements: Oracle Enterprise Manager Cloud Control 13.3.2 has the following ZDLRA related enhancements:
  - DBA-level ZDLRA protected database monitoring and reporting: Individual DBA access is now provided to ZDLRA protected database monitoring data and reports, restricted to the data for the protected databases you manage.
  - Copy-to-Cloud management and monitoring: You can now manage and monitor ZDLRA 12.2.1.1.2 Copy-to-Cloud functionality.
- Remote Authentication Dial-In User Service (RADIUS) authentication support: You can now configure target database login from Oracle Enterprise Manager using RADIUS authentication in synchronous mode.  
For more information, see Doc ID 2543558.1 in [My Oracle Support](#).
- Support availability information: Oracle Enterprise Manager Cloud Control 13.3.2 has added support for the following:
  - Oracle Database 18c and 19c as repository and managed targets
  - Oracle Exadata Database Machine X8 and PDU

## Oracle Linux Host Administration

This section describes new features and enhancements for Oracle Linux Host Administration:

- The new Oracle Linux Home target will enable the user to access and perform complete management of Oracle Linux Hosts. This includes Bare Metal Provisioning (BMP), Host Patching, Ksplice Patching along with Host Administration and Management. The new features for Linux hosts are summarized for all the managed hosts on this target home page to enable simplicity of Oracle Linux Host management.
- Ksplice allows system administrators to deliver valuable patches with lower costs, less downtime, increased security, and greater flexibility and control. Ksplice updates the Linux operating system (OS) kernel and key user space libraries, while the OS is running, without a reboot or any interruption. The Oracle Linux Home target adds support for Kernel and User space patching using Ksplice. It also provides information on Ksplice and effective Kernel Versions, Patches and Packages, and Compliance Status of the managed Oracle Linux Hosts.
- Oracle Enterprise Manager now supports Oracle Linux Host Administration and Monitoring without YaST dependency. Host agent must be running on the latest Enterprise Manager Agent Bundle Patch 13.2.0.0.0 or later Agent versions.

For more information, see Oracle Linux Home in the *Oracle Enterprise Manager Cloud Control Lifecycle Management Administrator's Guide*.



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