Oracle® Enterprise Manager Ops Center

What's New in This Release?

12*c* Release 2 (12.2.2.0.0)

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This document provides an overview of new and enhanced features, by release:

- New and Enhanced Features in 12c Release 2 Update 2 (12.2.2.0.0)
- New and Enhanced Features in 12c Release 2 Update 1 (12.2.1.0.0)
- New and Enhanced Features in 12c Release 2 (12.2.0.0.0)

New and Enhanced Features in 12*c* Release 2 Update 2 (12.2.2.0.0)

Oracle Enterprise Manager Ops Center 12*c* Release 2 Update 2 (12.2.2.0.0) contains a number of performance enhancements and bug fixes.

The following sections describe the new and enhanced features for this release:

- Performance Enhancements
- Asset Discovery
- Oracle Database Upgrade
- Proxy Controller Backup and Restore
- Improved Auto Service Request (ASR) Functionality
- Oracle VM Server for SPARC
- Oracle Engineered Systems
- Documentation Enhancements and Changes
- Other Enhancements

Performance Enhancements

Enhancements to performance and scalability, including database, network, storage, Enterprise Controller, and Proxy Controller sizing. A new *Oracle Enterprise Manager Ops Center Sizing and Performance Guide* is designed to help with planning an installation and performance optimization.

Feature enhancements provide significant performance improvements in the following areas:

- Ability to add multiple SAN LUNs in a single wizard. See *Oracle Enterprise Manager Ops Center Adding Volumes to SAN Storage Libraries* for details.
- A new option in User Preferences enables you to change how assets display in the Assets pane. By default, the asset types are expanded or collapsed depending on

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how many assets are in the first level of the hierarchy. If you prefer, you can specify that the assets are always expanded or always collapsed. See the *Oracle Enterprise Manager Ops Center Concepts Guide* for more information about User Preferences.

- A new option in User Preferences lets you disable the membership graphs from displaying. Disabling the graphs significantly improves the display of the asset and the action pane when you select an asset. See the *Oracle Enterprise Manager Ops Center Concepts Guide* for more information about User Preferences.

- The creation of default OS Provisioning profiles and plans is now a customizable feature. The default setting is to not generate the default profiles and plans, which significantly reduces the number of profiles and plans that you need to manage. See the *Oracle Enterprise Manager Ops Center Feature Reference Guide* for more about OS Provisioning profiles and plans. See the *Oracle Enterprise Manager Ops Center Administration Guide* for how to change the configuration.

Code optimization provide significant performance improvements in the following areas:

- Loading libraries for a server pool performance improves by 25-45%.

- Storage improvements result in reduced job duration when creating and associating a SAN libraries to multiple Control Domains. In addition, jobs run up to 9 times faster when you remove a large number of LUNs from a guest domain.

- Discovery optimization results in a 25% to 35% reduction in the time to discover zones and logical domains, and to deploy the virtualization agents.

- Enhancements to the Solaris Global Zone Virtualization Controller Agent improve the agent first start-up time and the restart time. The gain in performance is more significant with a large number of agent-managed Oracle Solaris zones.

- Enhancements to the Oracle VM Server for SPARC Virtualization Controller Agent improve the agent start-up and restart time while decreasing the agent's CPU consumption.The gain in performance is more significant with a large number of agent-managed logical domains.

- Improved performance in other areas, such as searching for assets, selecting zones and Oracle VM Server for SPARC control domains, and time to complete jobs.

Asset Discovery

Improved agent management when discovering and managing control domains and global zones. When you use the **Add and manage various types of assets via discovery probes** option and select the option to agent manage a control domain or a global zone asset, the agent automatically discovers existing logical domains and non-global zones. See the *Oracle Enterprise Manager Ops Center Feature Reference Guide* for more information.

Oracle Database Upgrade

The 12.2.2 upgrade includes an upgrade of the embedded database to Oracle Database 11.2.0.4. Oracle Database 11.2.0.4 is also supported for customer-managed databases. See the Oracle Enterprise Manager Ops Center Upgrade Guide for more information on upgrading the embedded database, the *Oracle Enterprise Manager Ops Center Administration Guide* for information about upgrading a customer-managed database, and the *Oracle Enterprise Manager Ops Center Certified Systems Matrix* for information about supported database versions.

Proxy Controller Backup and Restore

You can now use the **proxyadm** command to back up and restore Proxy Controller data. See the *Oracle Enterprise Manager Ops Center Administration Guide* for more information.

Improved Auto Service Request (ASR) Functionality

Several bug fixes, including a JDMK fix for ILOM, have improved the ASR functionality in this release. Enhanced documentation, including a new document that describes how to configure and test your ASR connection. See *Oracle Enterprise Manager Ops Center Enabling and Testing Auto Service Request* and the *Oracle Enterprise Manager Ops Center Administration Guide*.

Oracle VM Server for SPARC

The following enhancements for Oracle VM Server for SPARC are available in this release:

- **Delayed Reconfiguration state**: The software detects when a logical domain is in a delayed reconfiguration state. A message in the center pane is visible to all logical domains attached to the affected control domain. A new action to cancel the delayed reconfiguration is available. The action is restricted to the control domain, or a PCIe root domain (if supported.)

- **Do Not Plumb IP**: Implementation of a new Address Allocation Method, `Do Not Plumb IP`, is available when attaching a non-SR-IOV enabled network to a control domain. You can use this option to avoid creating a virtual NIC in the control domain for networks used only by logical domains. This option allows better control of the visibility of these connections in the control domain.

- **New mode for the command-line interface (CLI)**: A new mode, `collisions`, is designed to detect or prevent two or more logical domains from using the same host ID or MAC address.You can reserve MAC address for future logical domains that are not created with Oracle Enterprise Manager Ops Center. This is useful when you create logical domains outside of the Oracle Enterprise Manager Ops Center software and then later manage the logical domains.

See the **Oracle Enterprise Manager Ops Center Feature Reference Guide** for more information.

Oracle Engineered Systems

Some actions in Oracle Enterprise Manager Ops Center might break an Oracle SuperCluster engineered system configuration. To protect the engineered system from inadvertent changes in the configuration and the resulting loss of service, high-risk actions are disabled for all users. See the *Oracle Enterprise Manager Ops Center Feature Reference Guide* for more information.

Documentation Enhancements and Changes

The following new documentation is available:

- *Oracle Enterprise Manager Ops Center Performance Guide* describes how to optimize performance for Oracle Enterprise Manager Ops Center.

- *Oracle Enterprise Manager Ops Center Enabling and Testing Auto Service Request* describes how to enable and test ASR in Oracle Enterprise Manager Ops Center.

- *Oracle Enterprise Manager Ops Center Configuring a Secondary Service Domain* describes how to create a secondary service domain to improve resilience of Oracle VM Server for SPARC logical domains.

- *Oracle Enterprise Manager Ops Center Adding Volumes to SAN Storage Libraries* describes how to add storage capacity to storage libraries managed by Oracle Enterprise Manager Ops Center.

Other Enhancements

The following are some of the other enhancements available in this release:

- New Automatic Recovery features for server pools: Beginning with this release, you can disable Automatic Recovery at the server pool level, or you can limit the number of attempts to recovery an asset. See the *Oracle Enterprise Manager Ops Center Feature Reference Guide* for more information.

- Changes to how Oracle Enterprise Manager Ops Center checks and edits the `/etc/patch/pdo.conf` file on the global zone. See the *Oracle Enterprise Manager Ops Center Feature Reference Guide* for more information.

- Scripts enable you to extend the zone migration feature to include the migration of dependencies, such as storage or other resources that are not managed by Oracle Enterprise Manager Ops Center. The following new variables are available in a user migration script for non-global zone migration and auto recovery:

  - `OEMOC_JOBID`: The current Job ID.

  - `OEMOC_TARGET`: The SOURCE or DESTINATION, depending where the step runs.

  - `OEMOC_AUTOMATIC_RECOVERY`: These environment variables are used for zone migration and auto recovery jobs.

  See the *Oracle Enterprise Manager Ops Center Feature Reference Guide* for information about using scripts to migrate a zone with dependencies.

- Notifications for annotations to incidents now include the content of the annotation. It is not necessary to log in and view the Message Center to see the annotation.

- A new option in User Preferences to disable the ability create multiple sessions. You can disable for a specific user account or for a role, which affects all user accounts that have that assigned role.

- The audit log file, which shows the activity on the Enterprise Controller and its Proxy Controllers, now records changes to the Domain Model in addition to user log ins, changes to user accounts, and job details. See the *Oracle Enterprise Manager Ops Center Feature Reference Guide* for information about logs, directories, and how to get details on activity.

- The installation log files are now located in the `/var/tmp/opscenter` directory, a location with more restrictive permissions.

New and Enhanced Features in 12*c* Release 2 Update 1 (12.2.1.0.0)

Oracle Enterprise Manager Ops Center 12*c* Release 2 Update 1 (12.2.1.0.0) contains a number of bug fixes.

> **Note:** To upgrade to this release, you must be using 12.2.0.0.0. If you are using earlier versions, upgrade to 12*c* Release 2 (12.2.0.0.0) before upgrading to 12*c* Release 2 Update 1 (12.2.1.0.0).
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> See the *Oracle Enterprise Manager Ops Center Upgrade Guide* for upgrade requirements and for how to upgrade from different versions.

The following sections describe the new and enhanced features for this release:

- Oracle Solaris 11.2 Support
- New Hardware Support
- LDAP Enhancement
- Audit Feature
- CPU Architecture
- Performance Enhancements

Oracle Solaris 11.2 Support

Oracle Enterprise Manager Ops Center supports discovery, monitoring, OS provisioning, OS provisioning for Oracle VM for SPARC, OS updating, zone creation and management, and OS Analytics for Oracle Solaris 11.2.

Oracle Solaris 11 is a supported platform for the Enterprise Controller and Proxy Controllers.

> **Note:** New Oracle Solaris 11.2 features, such as kernel zones, are not supported in Oracle Enterprise Manager Ops Center 12.2.1.0.0.

See the *Oracle Enterprise Manager Ops Center Certified Systems Matrix* for a list of supported operating systems.

New Hardware Support

Oracle Enterprise Manager Ops Center supports the discovery of the x86 64-bit Oracle Sun X4-8 server through the ILOM service processor.

See the *Oracle Enterprise Manager Ops Center Certified Systems Matrix* for a list of supported operating systems, hardware, and browsers.

LDAP Enhancement

New flexibility to designate a user login name. Group schemas that have memberUid or uniqueMember keys are supported.

You can use attributes in the LDAP directory structure, such as an e-mail address or a name, as the login name. See the *Oracle Enterprise Manager Ops Center Administration Guide* for information about adding a directory server.

Audit Feature

Oracle Enterprise Manager Ops Center logs user log ins, changes to user accounts, and job details. The audit log file shows the activity on the Enterprise Controller and its Proxy Controllers. See the *Oracle Enterprise Manager Ops Center Feature Reference Guide* for information about logs, directories, and how to get details on user activity.

CPU Architecture

When you want the ability to migrate a logical domain from a SPARC server with one type of CPU chip to one with another type of chip (cross-CPU migration), use the generic CPU architecture.

Newer platforms have a new class for the CPU architecture, named migration-class1 or sparc64-class1. The class1 architecture enables you to migrate those logical domains across systems while maintaining the full capabilities of the logical domains.

The new class1 CPU architecture is available for the following servers:

- Beginning with Oracle SPARC T4 servers (generic: migration-class1)

- Oracle M5 and M6 servers (generic: migration-class1)

- Fujitsu M10 servers (generic: sparc64-class1)

When you create guest domains with the generic CPU architecture, Oracle Enterprise Manager Ops Center selects the best option based on the system when you start the guest after a shutdown-detach or creation. For example, when you have a guest with generic CPU architecture and you start the guest on an Oracle SPARC T2 or T3 server, the CPU architecture is set to generic. Whereas, when you start the guest on Oracle SPARC T4 or T5 servers, the CPU architecture of the guest is set to generic (migration-class1). See the *Oracle Enterprise Manager Ops Center Feature Reference Guide* for information about the CPU architecture and migrating logical domains.

Performance Enhancements

Enhancements to the Oracle VM Server for SPARC Virtualization Controller Agent improve the agent start-up time while decreasing the agent's CPU consumption.

Enhancements including improving the user interface to display job, mechanism to check access rights, and improving the start-up time for an Enterprise Controller with a large number of assets.

Improved performance of logical domains and the associated SAN library.

New and Enhanced Features in 12*c* Release 2 (12.2.0.0.0)

If you are running Oracle Enterprise Manager Ops Center 12.1.3 or 12.1.4, you can upgrade to version 12.2. See the *Oracle Enterprise Manager Ops Center Administration Guide* for upgrade requirements and for how to upgrade from versions earlier than the 12.1.3 release.

The following sections describe the new and enhanced features for this release:

- Hardware, Operating Systems, and Monitoring

- Virtualization
- Virtual Datacenter
- Oracle Engineered Systems
- Upgrade and High Availability
- Command-Line Interface
- Documentation Enhancements and Changes

Hardware, Operating Systems, and Monitoring

The following are the major new features and enhanced features in this release:

- **Operating System Provisioning**: In earlier releases, you created a single OS Provisioning profile to provision operating systems and Oracle VM Server for SPARC systems. New with this release, the OS configuration parameters are now in a separate profile. Beginning with 12*c* Release 2 (12.2.0.0.0) provisioning operating systems requires the following two profiles:

  - **OS Provisioning profile**: Defines the image, provisioning, and installation requirements

  - **OS Configuration profile**: Defines the operating system and network configuration.

  Creating a separate OS Configuration profile provides you with more flexibility and improves the user experience for complex provisioning jobs.

  If you created OS Provisioning profiles in earlier versions of the software and use the Upgrade feature to upgrade to Oracle Enterprise Manager Ops Center 12.2, the OS Provisioning profiles are automatically migrated to an OS Provisioning profile and an OS Configuration profile. See the *Oracle Enterprise Manager Ops Center Feature Reference Guide* for more information about the format of the OS provisioning profiles and plans appear after the upgrade.

- **Oracle SPARC M5-32 and Oracle SPARC M6-32 Server Hardware using SDM**: Support for the Oracle SPARC M5-32 and Oracle SPARC M6-32 servers using ILOM Simplified Data Model (SDM).

- **SDM Support**: SDM support, which is used to manage Oracle SPARC T5-1B, Oracle SPARC T5-2, Oracle SPARC T5-4, Oracle SPARC T5-8, Oracle SPARC M5-32 and Oracle SPARC M6-32 servers.

- **Fujitsu M10 Server Hardware**: Support for the Fujitsu M10 server using eXtended Service Control Facility (XSCF).

- **Monitoring enhancement**: The current alert status of an incident now appears in the asset's dashboard and in the Message Center.

- **Globally Disable Monitoring Policies**: Monitoring policies are enabled by default. If you do not want to use the monitoring feature, you can use the command-line interface to globally disable monitoring policies. When you disable the policies, monitoring rule conditions are no longer evaluated against collected data, the monitors are no longer deployed on the assets, and incidents and alerts are not generated.

Virtualization

The following new and enhanced features and functionality are available for Oracle VM Server for SPARC and Oracle Solaris Zones:

- **Discover and manage Oracle VM Server for SPARC servers that are not created with Oracle Enterprise Manager Ops Center**: Discover and fully manage Oracle VM Server for SPARC domains (control domains and logical domains) that you create without using Oracle Enterprise Manager Ops Center.

- **Add user configured Oracle VM Server for SPARC servers to an Oracle VM Server type of Server Pool and enable migration of their guests**:

  - User configured guests are discovered by the Oracle Enterprise Manager Ops Center agent deployed on an Oracle VM Server for SPARC Control Domain. Oracle Enterprise Manager Ops Center guest metadata is placed in the local metadata library in the /guests directory.

  - You can move a guest's metadata from one library to another, allowing it to be placed on an NFS library to facilitate migration.

  - You can add an Oracle VM Server for SPARC control domain to a server pool, even when the control domain has configured and running logical domains.

  - You can mark a guest's storage as shared to indicate to Oracle Enterprise Manager Ops Center that it is safe to assume the storage is available to other managed Oracle VM Server systems that are using the same back-end name. This allows storage not fully managed in an Oracle Enterprise Manager Ops Center library to be configured as part of guest migration. It is up to the administrator to ensure that storage marked as shared is available to all members of a pool.

  - You can add Oracle VM Server for SPARC systems to a server pool even if live migration between them is not possible due to CPU incompatibilities. This feature enables guest recovery to be performed within the server pool. Recovery is possible because you can often start a guest on an Oracle VM Server with a different SPARC processor type than its previous server, even if live migration is not possible between the two servers.

  - You can configure the CPU architecture of the guest domain to facilitate the cross-CPU migration. You can use the generic CPU architecture to enable CPU-independent migration.

- **Support for Whole-Core CPU allocation**: You can allocate the CPU resource to a logical domain as CPU Threads or whole-core. When you allocate a core to a logical domain, all the CPU Threads in the core are allocated to the logical domain. You can limit the maximum number of whole-core to be allocated to the domain. You can edit the configuration of the logical domain and switch between virtual CPU and whole-core CPU.

- **Multi I/O Domains, Direct I/O, and SR-IOV in managed Oracle VM Server for SPARC**: Enhancements in Oracle Enterprise Manager Ops Center enable you to use MPxIO, direct I/O, or SR-IOV for Oracle VM Server for SPARC.

  - Ability to create multiple I/O domains and root domains configured with direct I/O.

  - Support for PCIe SR-IOV enabled devices.

  - Multiple I/O paths and redundant I/O to support HA configurations.

Single Root I/O Virtualization is a PCI-SIG standard specification that enables efficient use of PCIe devices. A single PCIe card owned by a PCIe root complex is made to physically appear in multiple domains simultaneously. Many virtual machines share a single I/O resource, also know as physical function. A physical function is a PCIe device that is SR-IOV enabled with appropriate hardware and operating system support can appear as multiple, separate physical devices, each with its own configuration space. Each physical function can have up to 64000 virtual functions associated with it. You can directly assign a virtual function to a logical domain.

An SR-IOV enabled network interface has virtual functions created on the physical function. You can connect to a network using SR-IOV enabled network interface and assign the virtual functions to the logical domains. SR-IOV enabled networks are available from Control Domain and Root Domain. If you assign the PCIe card to an I/O domain, then the SR-IOV feature is not enabled.

- **VLAN Tagging**: Oracle VM Server for SPARC software supports 802.1Q VLAN-Tagging in the network infrastructure. The option to define the VLAN tagging mode is now available from the Enterprise Manager Ops Center UI when you connect networks configured with VLAN ID to the guest domains.

  > **Note:** A best practice is to create server pools with homogenous network tagging modes. When a server pool is mixed with servers attached to networks in untagged and tagged mode, the network configuration of the logical domain OS is lost when you migrate a guests or when you start a shutdown-detached guest on a new server. To re-establish the connection, you must change the configuration of the VNIC in the OS.

- **A single Ethernet network instance per CIDR (Classless Inter-Domain Routing)**: You can define and manage tagged and untagged networks based on Ethernet fabrics. Beginning with Oracle Enterprise Manager Ops Center 12.2, you have one network instance per CIDR with different tag values (tagged and untagged) irrespective of the fabric selected. The Define Network action lets you use the same network instance to create a tagged network with a VLAN ID and an untagged network without a VLAN ID. You can decide which network instance to use for your networking operations, such as attaching a network to a global zone or an Oracle VM Server for SPARC system.

- **Layered virtualization**: New feature enables you to deploy and manage non-global zones within Oracle VM Server logical domains. There is limited support for migration of zones within the logical domains.

- **User-defined network domains**: In addition to the Default network domain, you can create multiple network domains for specific purposes.

- **Specialized Virtualization Agent Controllers**: You can install one of the following specialized virtualization controller agents (VC agents) to manage your virtual environment:

  - **Zone VC Agent**: The global zone is reflected in the UI. Using this agent enables full zone monitoring and management actions.

- **Oracle VM Server VC Agent**: The Oracle VM Server, control domain and operating system are reflected in the UI. Using this agent enables full monitoring and management actions for the Oracle VM Server system.

Virtual Datacenter

The following enhancements are available for Virtual Datacenters (vDC):

- **Storage resource enhancement**: Beginning with 12c Release 2, in addition to specifying storage resources for volumes and templates, you can now specify storage resources for root disks when creating a vDC. This feature is now available for both NFS and iSCSI. You can now associate the rootdisk and volumes to specific projects or volume groups.

- **Server Template creation**: Enhancement to support the OS provisioning changes. You are now able to select an OS Configuration profile when creating a server template.

- **vServer Credentials**: A new flag is available when creating a vDC to force setting credentials for vServers created in the vDC.

- **vServer Resizing**: You can now modify the assigned resources to vServer in shutdown status in a vDC.

- **vServer high availability**: You can enable or disable high availability of vServers for all vDC virtualization technologies.

Oracle Engineered Systems

The following enhancements are available for Oracle SuperCluster systems management:

- **Oracle SuperCluster discovery**: You can discover Oracle SuperCluster systems by uploading a configuration file. The discovery profile is created using embedded data loaded from the configuration file.

  > **Note:**   The new method is not applicable to Embedded Oracle Engineered Systems. For those systems, continue to use the Embedded Oracle Engineered Systems Discovery profile that is in the Plan Management section of the UI.

- **Rack Enhancement**: Ability to add multiple racks for a single engineered system.

- **Hardware support**: Support for the Oracle SuperCluster M6-32 Servers.

Upgrade and High Availability

The following high availability and upgrade enhancements are available:

- **Improved Upgrade Support**: Upgrade bundles for the Enterprise Controller now include all Proxy Controllers, reducing the number of downloads required.

- **Capability for a high availability Proxy Controller**: You can enable automatic failover for Proxy Controllers. If a Proxy Controller goes offline, its managed assets automatically fail over to other available Proxy Controllers.

Command-Line Interface

The following enhancements are available for the command-line interface (CLI):

- **Server Certificates**: When remotely connecting to the Enterprise Controller from the CLI, you must accept the server's certificates. Once accepted, the certificates are stored in a local trust store for the user and do not require acceptance again. This change only impacts those who connect remotely, it does not impact local connections.

- **New commands and options**: A new option for the connect command, a new CLI preference, and a new CLI mode are available to view and manage your certificates.

- **New Update Mode option**: The update mode uses the -C option to indicate the channel name.

Documentation Enhancements and Changes

The Oracle Enterprise Manager Ops Center 12*c* Release 2 Documentation Library is located at http://docs.oracle.com/cd/E40871_01/index.htm. See the *Oracle Enterprise Manager Feature Reference Guide* for more information about the features.

The following documentation enhancements are available for 12*c* Release 2:

- *Oracle Enterprise Manager Ops Center Upgrade Guide*

  Describes how to upgrade to the latest version of Oracle Enterprise Manager Ops Center 12*c* Release 2.

- *Oracle Enterprise Manager Ops Center Ports and Protocols Guide*

  Contains the latest information on the ports and protocols that Oracle Enterprise Manager Ops Center uses and web sites that the product accesses.

- *Oracle Enterprise Manager Feature Reference Appendix Guide*

  This new guide contains the following appendixes: Asset Attributes, Expression Query Language, Library Incidents, and API for Oracle Enterprise Manager Ops Center appendixes.

- *Oracle Enterprise Manager Ops Center Command Line Interface Guide*

  This new guide contains information about the CLI and how to use the CLI. In addition to the traditional man pages, a copy of the man pages is available in this guide.

- More SPARC and Oracle Solaris end-to-end How To examples and workflows

  The How To documentation is now available in the Deploy How To tab in the library at http://docs.oracle.com/cd/E40871_01/nav/deployhowto.htm and the Operate How To tab in the library at http://docs.oracle.com/cd/E40871_01/nav/operatehowto.htm. Each section in these tabs begins with a workflow. The associated How To documents for the task appear beneath the workflow.

Related Resources

This document provides an overview of new and enhanced features. For detailed information about the features, see the *Oracle Enterprise Manager Ops Center Feature Reference Guide*, *Oracle Enterprise Manager Ops Center Administration Guide*, *Oracle Enterprise Manager Ops Center Command Line Interface Guide*, and other documentation

located in the documentation library at http://docs.oracle.com/cd/E40871_01/index.htm. Examples are available in the How To documentation at http://docs.oracle.com/cd/E40871_01/nav/deployhowto.htm and http://docs.oracle.com/cd/E40871_01/nav/operatehowto.htm.

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 that have purchased support 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.