
Oracle® VM

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Abstract

This document contains information on Oracle VM Release 3.0.3 and supersedes the product documentation. This document contains last-minute information that could not be included in the Oracle VM documentation. Read this document before installing Oracle VM. This document may be updated after it is released. To check for updates to this document, and to view other Oracle documentation, refer to the Documentation section on the Oracle Technology Network (OTN) Web site:

<http://www.oracle.com/technology/documentation/>

This document is intended for users, and administrators of Oracle VM. It includes a brief introduction of the product, and describes potential issues and the corresponding workarounds you may encounter while using Oracle VM.

Oracle recommends that you read this document before installing and using Oracle VM.

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1. Introduction

Oracle VM is a platform that provides a fully equipped environment for better leveraging the benefits of virtualization technology. Oracle VM enables you to deploy operating systems and application software within a supported virtualization environment. The components of Oracle VM are:

- Oracle VM Server for x86
- Oracle VM Manager

Oracle VM Server for x86 (Oracle VM Server) is a self-contained virtualization environment designed to provide a lightweight, secure, server-based platform to run virtual machines. Oracle VM Server is based upon an updated version of the underlying Xen hypervisor technology, and includes Oracle VM Agent. It also includes a Linux kernel with support for a broad array of devices, file systems, and software RAID volume management. The Linux kernel is run as dom0 to manage one or more domU virtual machines, each of which could be Linux, Oracle Solaris, or Microsoft Windows.

Oracle VM Manager is a server-based user interface, which is a standard Application Development Framework (ADF) web application to manage Oracle VM Servers. Oracle VM Manager provides virtual machine life cycle management, including creating virtual machines from installation media or from templates. It provides features such as power on, power off, deleting, importing, deploying, and live migration of virtual machines. Oracle VM Manager also effectively manages resources, including ISO files, virtual machine templates, and shared virtual disks.

This document contains last-minute release information about Oracle VM.

2. What's New in Oracle VM?

This section introduces the new features and enhancements of Oracle VM. This information is useful to users who have used previous releases of Oracle VM.

2.1. What's New in Oracle VM 3.0.3?

The new features and enhancements in Oracle VM Release 3.0.3 include:

Performance, Scalability and Security

- **Anti-Affinity Support:** Define which virtual machines cannot reside on the same Oracle VM Servers. Use this feature to achieve better availability by ensuring that critical resources do not reside on a shared single point of failure. See [Anti-Affinity Groups](#) in the *Oracle VM User's Guide* for information on anti-affinity.
- **Change Oracle VM Agent Password:** The Oracle VM Agent password for all Oracle VM Servers in a server pool can be changed from Oracle VM Manager. See [Changing Oracle VM Agent Passwords on Oracle VM Servers](#) in the *Oracle VM User's Guide* for information on how to change the Oracle VM Agent password.

Installation

- **Maintain Oracle VM Manager Identity After Reinstall:** Use the `runInstaller.sh --uid` option during installation. See [Oracle VM Manager Installation Script \(runInstaller\)](#) for information on the runInstaller script options, and also see [Installing Oracle VM Manager](#) for more general information on installation procedures in the *Oracle VM Installation and Upgrade Guide*.

Improved Usability

- **User Interface:** Improved wizards to allow smooth operation and closely match operational needs.
- **Virtual Machines:** Explicitly set maximum memory when creating virtual machines. Flexibility to update virtual disk attributes. Choose thick or thin provision. CDROM dynamic update. Virtual machine console does not require username/password. See [Managing Virtual Machines](#) in the *Oracle VM User's Guide* for information these new virtual machine features.
- **Live Migration Assistant:** During live migration, only *allowed* target Oracle VM Servers can be selected in the Live Migration dialog box. An additional section entitled **Why don't I see other servers to migrate to?** shows why migrating to a given server is not possible. Anti-affinity and hardware factors such as CPU family are taken into account.

2.2. What's New in Oracle VM 3.0.2?

The new features and enhancements in Oracle VM Release 3.0.2 include:

Performance, Scalability and Security

- **Updated Xen 4.0 Hypervisor:** More efficient power management capabilities, broader hardware support, and better performance, scalability and security for both hardware virtualized and paravirtualized guests.
- **Updated Dom0 Linux Kernel with Newer Drivers:** Better hardware support for higher performance, with the latest Unbreakable Enterprise Kernel.

- **Improved Scalability:** Capable of supporting Oracle VM Servers with up to 160 CPUs and 2TB memory.
- **Updated OCFS2 1.8 Cluster File System:** Instant clone support in OCFS2 1.8 enables significantly faster virtual machine provisioning and cloning.
- **Support for OVF:** Use Oracle VM Manager to import a broad range of Open Virtualization Format (OVF) based software assemblies produced by Oracle to accelerate application deployment. See [Assemblies](#) in the *Oracle VM User's Guide* for information on working with assemblies.

Network and Storage Configuration and Management

- **Network Configuration and Management:** All Oracle VM Server logical network configuration and management is now performed using Oracle VM Manager, for example, NIC port bonding, and configuring VLAN Networks. See [Managing Networks](#) in the *Oracle VM User's Guide* for information on network management in Oracle VM Manager.
- **Storage Configuration and Management:** The Oracle VM Storage Connect framework enables Oracle VM Manager to directly access the resources and functionality of existing storage systems, supporting native storage services such as SAN or NFS storage creation, deletion, expansion. This allows Oracle VM Manager to automatically discover available storage and create new storage repositories, or to map raw storage directly to virtual machines. See [Managing Storage](#) in the *Oracle VM User's Guide* for information on storage management.

Physical and Virtual Status and Resource Information

- **Resource Information:** Performance statistics are available for CPU, memory, disk and network for each physical Oracle VM Server and virtual machine. Events are displayed for each physical and virtual object, such as port up/down status. IP address and other configuration information is displayed directly in the user interface.



Note

Not all metrics are exposed through the Oracle VM Manager user interface.

Policy-Based Resource Management

- **Distributed Resource Scheduling (DRS) for Capacity Management:** DRS provides real-time monitoring of Oracle VM Server utilization with the goal to rebalance a server pool to provide consistent resources to the running virtual machines. DRS migrates load away from heavily-loaded Oracle VM Servers to less-loaded Oracle VM Servers.
- **Distributed Power Management (DPM) to Optimize Server Pool for Minimum Power Consumption:** DPM complements DRS to reduce the Oracle VM Servers in a server pool when there are periods of low resource utilization. DPM can automatically add capacity as needed when resource utilization increases.

See [Server Pool Policies](#) in the *Oracle VM User's Guide* for information on using DRS and DPM.

Improved Usability

- **User Interface:** Based on the latest Oracle Application Development Framework (ADF), Oracle VM Manager now includes a fully interactive tree view and automatic refresh to show the real-time state of the physical and virtual environment. See [Using Oracle VM Manager](#) in the *Oracle VM User's Guide* for information on using the new user interface.

- **Virtual Machines:** Specify the boot order (for example: disk, CDROM) to simplify installs. Directly attach raw storage or virtual disks (vdisks). See [Managing Virtual Machines](#) in the *Oracle VM User's Guide* for information on virtual machines.

3. Notable Bug Fixes

This section discusses any notable bug fixes in this release. There are many other bugs that are fixed in this release; this section highlights the more notable ones.

- Oracle VM Manager upgrade improvements significantly reduces upgrade time. For upgrade instructions, see [Upgrading Oracle VM Manager](#) in the [Oracle VM Installation and Upgrade Guide](#).
- IP addresses entered in Oracle VM Manager are always validated to ensure correct formatting. An error message is displayed if the IP address is not properly formatted.
- The Linux kernel device manager (udev) has been improved to increase performance. The most significant improvement is that the time udev takes to run after booting the server has been shortened from 2-3 minutes to just seconds, eliminating system 'hangs' and other problems in systems which are sensitive to startup time.
- When the management network also fulfills the role of virtual machine network, a bridge for virtual machine network connectivity is created on Oracle VM Servers as they are added to the environment. As a result, virtual machines will continue to work properly when migrated to a new Oracle VM Server.
- DHCP is able to be used for VLAN Group interfaces.
- Both Oracle VM Server and the Unbreakable Enterprise Kernel (UEK) have been patched to prevent the flood of kernel warning messages caused by illegal configuration of certain Broadcom NetXtreme II XGb ([bnx2x](#)) network controllers. If an illegal configuration is detected, only one warning message per controller card is displayed.
- Several network throughput issues with certain Broadcom NetXtreme II XGb ([bnx2x](#)) network controllers on Oracle VM Server have been resolved: default TPA settings have no adverse effect on network throughput, and network between virtual machines and NFS storage no longer hangs with [bnx2x](#) controllers.
- When using the untagged VLAN segment, the user must configure IP address information on the NIC port, not on the VLAN interface. This eliminates duplicate configurations and any associated risks of misconfiguration.
- A late locking scheme has been implemented for networks on virtual machine clones: the virtual NIC connection in the virtual machine is only locked at the end of the clone operation. As a result, locking issues with ethernet networks no longer occur when multiple virtual machines are cloned in parallel from the same template.
- In Oracle VM Manager, the **Acknowledge All Events** button effectively clears **all** events, not just the items visible in the current list view.

4. Supported Guest Operating Systems

The guest virtual machines you create must be one of the following supported configurations.

Table 1. 64-bit CPU Hardware Virtualized Supported Guest Operating Systems (Linux and Solaris)

Guest Operating System	Hardware Virtualized 32-bit	Hardware Virtualized 32-bit with PV Drivers	Hardware Virtualized 64-bit	Hardware Virtualized 64-bit with PV Drivers
Oracle Linux Release 6.x	Yes	Yes	Yes	Yes
Oracle Linux Release 5.x	Yes	Yes	Yes	Yes
Oracle Linux Release 4.x	Yes	Yes	Yes	Yes
Oracle Solaris 11 ^a	N/A	N/A	N/A	Yes
Oracle Solaris 10 ^a	N/A	Yes	N/A	Yes
RedHat Enterprise Linux 6.x	Yes	Yes	Yes	Yes
RedHat Enterprise Linux 5.x	Yes	Yes	Yes	Yes
RedHat Enterprise Linux 4.x	Yes	Yes	Yes	Yes

^a Oracle Solaris support begins with Solaris 10 10/09. The Solaris 10 or Solaris 11 OS runs as a hardware virtual machine (HVM), which requires HVM support (Intel VT or AMD-V) on the underlying hardware platform. By default, Solaris 10 or Solaris 11 OS already has the required paravirtualized (PV) drivers installed as part of the OS. Oracle Solaris 10 supports x86 32-bit and 64-bit architecture. 32-bit or 64-bit mode is selected at OS boot time by examining the hypervisor and the underlying hardware. Oracle Solaris 11 supports x86 64-bit architecture only.

Table 2. 64-bit CPU Hardware Virtualized Supported Guest Operating Systems (Microsoft Windows)

Guest Operating System	Hardware Virtualized 32-bit	Hardware Virtualized 32-bit with PV Drivers 2.x	Hardware Virtualized 64-bit	Hardware Virtualized 64-bit with PV Drivers 2.x
Microsoft Windows™ 7 SP1	Yes ^a	Yes	Yes ^a	Yes
Microsoft Windows™ Vista SP2	Yes ^a	Yes	Yes ^a	Yes
Microsoft Windows™ XP SP3	Yes ^a	Yes	Yes ^a	Yes
Microsoft Windows™ Server 2008 R2 SP1	N/A	N/A	Yes ^a	Yes
Microsoft Windows™ Server 2008 SP2	Yes ^a	Yes	Yes ^a	Yes
Microsoft Windows™ Server 2003 R2 SP2	Yes ^a	Yes	Yes ^a	Yes
Microsoft Windows™ Server 2003 SP2	Yes ^a	Yes	Yes ^a	Yes

^a HVM-only mode is used to facilitate the Windows PV Drivers installation. Windows PV Drivers are required on the Windows OS if available in order to be supported as a guest OS.

Table 3. 64-bit CPU Paravirtualized Supported Guest Operating Systems

Guest Operating System	Paravirtualized 32-bit	Paravirtualized 64-bit
Oracle Linux Release 6.x	Yes	Yes
Oracle Linux Release 5.x	Yes	Yes
Oracle Linux Release 4.x	Yes	Yes
RedHat Enterprise Linux 6.x	Yes	Yes
RedHat Enterprise Linux 5.x	Yes	Yes

Guest Operating System	Paravirtualized 32-bit	Paravirtualized 64-bit
RedHat Enterprise Linux 4.x	Yes	Yes

Table 4. Support Matrix of Windows PV Drivers on Oracle VM Releases

Oracle VM Release	Windows PV Driver 1.0.8	Windows PV Driver 1.0.11	Windows PV Driver 2.0.7	Windows PV Driver 3.0.1
Oracle VM 2.1.5	Yes	Yes	No	No
Oracle VM 2.2.0	Yes	Yes	No	No
Oracle VM 2.2.1	No	Yes	Yes	No
Oracle VM 2.2.2	No	Yes	Yes	No
Oracle VM 3.0.1	No	No	Yes	Yes
Oracle VM 3.0.2	No	No	Yes	Yes
Oracle VM 3.0.3	No	No	Yes	Yes

5. Configuration Limits

This section contains the configuration maximums for Oracle VM. The limits presented in the following tables represent tested, recommended limits, and are fully supported by Oracle.

Table 5. Virtual machine maximums

Item	Maximum
Virtual CPUs	128
Virtual RAM on x86 (32-bit) guests	63 GB
Virtual RAM on x86_64 (64-bit) guests	1 TB
Paravirtualized Guests	
Virtual NICs	31
Virtual disks	109
Hardware Virtualized Guests	
Virtual NICs	8
IDE disks (including CDROM and virtual disks)	4
SCSI disks	7

Table 6. Oracle VM Server maximums

Item	Maximum
CPUs	160
RAM	2 TB
Virtual Machines	128

Table 7. Server pool and cluster maximums

Item	Maximum
Oracle VM Servers in a server pool	32

Table 8. Storage maximums

Item	Maximum
LUNs in a storage array	1,000
OCFS2 volume size	64 TB
Files per OCFS2 volume	30,000
Virtual disk	10 TB
Virtual IDE drives per device	4

Table 9. Network maximums

Item	Maximum
NICs ports per network bond	2
Network bonds per Oracle VM Server	5

6. Known Limitations and Workarounds

This section contains information on the known limitations and workarounds for Oracle VM.

6.1. Oracle VM Servers and Server Pools

This section contains the known issues and workarounds related to Oracle VM Servers and server pools.

6.1.1. Server BIOS Settings

The following server BIOS settings may be required to use Oracle VM Server:

- AHCI mode may be necessary to recognize the CDROM device to perform an installation from CDROM.
- Disable I/O MMU Virtualization Settings; for Intel-based servers this is *VT-d*; for AMD based servers this is *AMD-Vi* or *IOMMU*. I/O MMU is not supported in this release.

6.1.2. Network Interface in PXE Kickstart File

When using a PXE boot kickstart file to perform an Oracle VM Server installation, make sure you specify the network interface to be used for the management interface first. If you have more than one network interfaces specified in a kickstart file, the first interface is used as the management interface. The management interface is the only *live* interface after a PXE install of Oracle VM Server. You should manually configure any other network interfaces on the Oracle VM Server to start on boot in the `/etc/sysconfig/network-scripts/ifcfg-*` files. Set the `ONBOOT=NO` parameter to `ONBOOT=YES`.

6.1.3. Increasing Dom0 Memory

There are cases where it may become necessary to increase the Dom0 memory size to meet the demand of running applications. For example, presenting one iSCSI LUN takes approximately 3.5MB of system memory. Consequently, a system that uses many LUNs quickly requires a larger amount of memory in accordance with the storage configuration.

Workaround: Change the amount of memory allocated to Dom0. See [Changing the Dom0 Memory Size](#) for information on how to change the Dom0 memory allocation.

6.1.4. Oracle VM Server Yum Upgrades Retain Old Kernel

When upgrading Oracle VM Servers using the Yum update method, the kernel firmware is upgraded, and a new kernel is installed, leaving the old kernel still installed and available. When upgrading Oracle VM

Servers using the CDROM method, the kernel firmware is upgraded, and the kernel is also upgraded, so the old kernel is no longer installed nor available.

6.1.5. Oracle VM Server Installation Fails with Broadcom Gigabit Ethernet Controller

Installing Oracle VM Server on a system such as the Dell 380, with a Broadcom Gigabit Ethernet Controller fails with an error similar to the following example:

```
Traceback (most recent call first):
File "/usr/lib/anaconda/network.py", line 685, in write
if dev.get('BOOTPROTO').lower() in ['dhcp', 'ibft']:
File "/usr/lib/anaconda/yuminstall.py", line 1394, in doPreInstall
anaconda.id.network.write(anaconda.rootPath)
File "/usr/lib/anaconda/backend.py", line 184, in doPreInstall
anaconda.backend.doPreInstall(anaconda)
File "/usr/lib/anaconda/dispatch.py", line 207, in moveStep
```

The installer cannot detect the network adapter, so fails to complete the installation.

6.1.6. Oracle VM Server Installation on Sun Fire X4800

If you are installing Oracle VM Server on a Sun Fire X4800, you must provide extra parameters when booting from the installation media (CDROM or ISO file), or when using a kickstart installation. These parameters allow the megaraid_sas driver to load correctly.

If booting from the installation media, press F2 when the initial boot screen is displayed and provide the following additional parameters as part of the boot command:

```
mboot.c32 xen.gz extra_guest_irqs=64,2048 nr_irqs=2048 --- vmlinuz --- initrd.img
```

If using a kickstart installation, add the additional kernel parameters to the PXE configuration file.

If you want to make these changes permanent, edit the /boot/grub/grub.conf file in your Oracle VM Server after the installation has completed.

6.1.7. Restarted Oracle VM Server is Not Rediscovered

If the NIC that connects to the storage on the master Oracle VM Server is down, the master Oracle VM Server is restarted, but Oracle VM Manager does not rediscover the Oracle VM Server. This is an intermittent issue and may not always occur.

6.1.8. Wake On Lan (WOL) Fails if Oracle VM Servers on Different Subnets

Starting or restarting Oracle VM Servers fails if the Oracle VM Servers in a server pool are on different subnets.

Workaround: Use IPMI (Intelligent Platform Management Interface) to start or restart Oracle VM Servers in a server pool that are on different subnets.

6.1.9. Remove Oracle VM Server from Server Pool Fails on Redeployed Oracle VM Manager

If Oracle VM Manager is redeployed to a new computer, you should rediscover any file servers. If you do not rediscover the file servers, and the server pool file system is on the file server, you cannot remove Oracle VM Servers from the server pool.

6.1.10. Unable to Rediscover Server Pool after Database Clean

If you have server pools in your environment and you clear the Oracle VM Manager database, you cannot rediscover and rebuild your previous Oracle VM environment. The following error is in the job:

```
OVMRU_000021E Cannot perform operation on pool: Unknown pool found for discovered Pool FS.
The pool does not have a Virtual IP Address.
```

Workaround: Follow these steps to rediscover the server pools:

1. Discover one Oracle VM Server from the server pool.
2. Register, and refresh your storage server.
3. Refresh the file system that contains the server pool file system.
4. Refresh the file systems that contains the repositories.
5. Refresh the repositories.
6. Refresh all Oracle VM Servers in the pool to discover the virtual machines.

6.1.11. I/O-intensive Storage Operations Disrupt Cluster Heartbeat

The OCFS2 heartbeating function can be disturbed by I/O-intensive operations on the same physical storage. For example: importing a template or cloning a VM in a storage repository on the same NFS server where the server pool file system resides may cause a time-out in the heartbeat communication, which in turn leads to server fencing and reboot.

Workaround: To avoid unwanted rebooting, it is recommended that you choose a server pool file system location with sufficient and stable I/O bandwidth. Place server pool file systems on a separate NFS server or use a small LUN, if possible.

6.1.12. Unable to Remove Server from Cluster: Heartbeat Region Still Active

If OCFS2 file systems are still mounted on an Oracle VM Server you want to remove from a cluster, the remove operation may fail. This is due to the fact that the OCFS2 mount is an active pool file system or storage repository.

Workaround: If a storage repository is still presented, unpresent it from the Oracle VM Server before attempting to remove the server from the cluster. If a pool file system is causing the remove operation to fail, other processes might be working on the pool file system during the unmount. Try removing the server at a later time.

6.1.13. Unable to Remove Oracle VM Server from Cluster: Heartbeat in Configured Mode

An Oracle VM Server is in *heartbeat configured* mode if the server pool file system is not mounted. Either the file system failed to mount or the mount was lost because of hardware issues such as unavailability of the LUN of NFS server containing the file system to be mounted.

Workaround: Mount the file system at the Oracle VM Server command line, or, as a last resort, reboot the Oracle VM Server and allow it to join the cluster automatically at boot time.

6.1.14. Rediscovering Oracle VM Servers Throws Cluster Error

During rediscovery of an Oracle VM Server, the following error may occur:

```
om.oracle.ovm.mgr.api.exception.FailedOperationException: OVMAPI_4010E
Attempt to send command: discover_cluster to server: ip_address failed.
OVMAPI_4004E Server Failed Command: discover_cluster , Status:
org.apache.xmlrpc.XmlRpcException: exceptions.Exception:discover_cluster
already in progress
```

This may occur if you rediscover the master Oracle VM Server, then rediscover another Oracle VM Server without the master role. This occurs on an NFS-based server pool file system.

Workaround: Refresh the Oracle VM Server.

6.1.15. Netconsole Error During Oracle VM Server Startup, *Unknown Error 524*

To use netconsole you must specify a non-bridged ethx device, in the `/etc/sysconfig/netconsole` file on an Oracle VM Server, for example:

```
# The ethernet device to send console messages out of (only set this if it
# can't be automatically determined)
# DEV=
DEV=eth2
```

6.1.16. ACPI Buffer Error After Installing Oracle VM Server

On some Intel-based systems, the following error may occur after installing Oracle VM Server when the computer is started:

```
[ 0.674742] ACPI Error: Field [CPB3] at 96 exceeds Buffer [NULL] size 64 (bits)
(20090903/dsopcode-596)
[ 0.675167] ACPI Error (psparse-0537): Method parse/execution failed
[\_SB\_OSC] (Node ffff88002e4fba50), AE_AML_BUFFER_LIMIT
```

This has been observed on systems with the following BIOS information, but may also occur in other BIOS versions:

Vendor: Intel Corp. Version: S5500.86B.01.00.0036-191.061320091126 Release Date: 06/13/2009 BIOS Revision: 17.18 Firmware Revision: 0.0

HP ProLiant BL685c G6 HP BIOS A17 12/09/2009 Backup Version 12/01/2008 Bootblock 10/02/2008

This error can safely be ignored.

6.1.17. Cisco Blade Servers Must Have Fixed UUID

Cisco Blade servers cannot be configured to boot with random UUIDs. Each Oracle VM Server must have a fixed UUID to allow the Oracle VM Server to move between Blades. To configure a fixed UUID, see:

http://www.cisco.com/en/US/docs/unified_computing/ucs/sw/gui/config/guide/1.3.1/UCSM_GUI_Configuration_Guide_1_3_1_chapter26.html#task_6026472137893749620

6.1.18. 10Gbit Ethernet Network Card May Require Additional Settings to Maximize Performance

The 10Gbit Ethernet drivers `mlx4_en` and `qlcnic` may need additional settings to maximize performance. Disable LRO (Large Receive Offload) to relieve guest performance issues. Edit the `/etc/rc.local` file of the Oracle VM Server and add the following text to the end of the file for the identified network interfaces:

```
ethtool -K interface lro off
```

Reboot the Oracle VM Server after modifying the `/etc/rc.local` file.

6.2. Virtual Machines

This section contains the known issues and workarounds related to virtual machines.

6.2.1. Editing Virtual Machine Configuration File Not Supported

Changes made to the `vm.cfg` configuration file are not reflected in Oracle VM Manager. For example, if you edit the HA setting in the `vm.cfg` to disable HA, and the virtual machine is stopped by any method other than using Oracle VM Manager, the virtual machine is restarted. Oracle VM Manager is not aware of the HA change in the virtual machine's configuration file.

6.2.2. Concurrent Template Operations May Fail Due to Lock Issue

When importing and deleting several templates concurrently, or when an Oracle VM Server is removed during the import of a template, a lock exception error may appear. However, the template upload often completes successfully despite the error message, but it does not appear in the list of available templates in the storage repository.

To resolve this problem, refreshing the storage repository is often sufficient, after which the uploaded template file appears in the list. In some cases the imported template turns out to be incomplete. In that case, you should delete the template and import the template again.

6.2.3. Virtual Machine Status Stuck

Starting a PVM virtual machine using PXE type boot with an invalid network URL causes the virtual machine status to be *in progress* indefinitely. To resolve this, abort the virtual machine start job. Edit the virtual machine and provide the correct URL.

Similarly, jobs may *'hang'* or remain *in progress* every time a virtual machine is started or stopped. A virtual machine may be in an unresponsive state for a variety of reasons and consequently fail to respond to a start or stop request. The appropriate action in this case is to abort the job.

6.2.4. Virtual Machine Created with Network (PXE) Installation Does Proceed Beyond Pre Boot

Creating a virtual machine using the Network method (PXE) does not proceed beyond pre boot, so the virtual machine is not created. This occurs for Oracle Linux 5.x virtual machines.

6.2.5. Hardware Requirements for Hardware Virtualized Guests

Creating hardware virtualized guests requires the Oracle VM Server has an Intel-VT (code named as Vanderpool) or AMD-V (code named as Pacifica) CPU. See the [Oracle VM Installation and Upgrade Guide](#) for a list of supported hardware.

6.2.6. Creating a PVM Guest Slow Using Local Storage

Creating a PVM guest using local storage may take a very long time. This may be caused by write caching being turned off for the local disk.

Workaround: Enable write caching for the disk using the `hdparam` utility.

6.2.7. HVM Guest Kernel Panic

HVM virtual machines with Linux, Solaris or Windows guest operating system may experience kernel panic when the virtual machine is stopped and started several times.

Workaround: Set the Maximum Memory and the Memory fields to the same value in the Create/Edit Virtual Machine wizard.

6.2.8. Disks Not Added to a Virtual Machine

When adding a new disk (whether it be a virtual disk, physical disk, or an ISO file) to a virtual machine, if you do not select the **Disk Ordering** tab in the **Edit a Virtual Machine** dialog box, the disk(s) are not added to the virtual machine.

Workaround: When adding a virtual disk, physical storage, or ISO file to a virtual machine using the **Edit a Virtual Machine** dialog box, first select the disk from the **Disks** tab, then select the **Disk Ordering** tab to order the new disk(s).

6.2.9. Cannot Change Disk Order for HVM Guests

On an HVM guest, you can dynamically add and remove ISO files to CDROM slots to a running virtual machine, but you cannot change the disk order.

6.2.10. Changing Number of Virtual CPUs Not Supported for PVHVM Guests

For hardware virtualized guests with paravirtualized drivers (PVHVM) changing the number of virtual CPUs is not supported. The guest will continue to display the virtual CPUs as originally defined.

6.2.11. Improving Mouse Pointer Control in Virtual Machine Console

When you launch the virtual machine console from Oracle VM Manager you may experience that the mouse pointer on your local machine and the mouse pointer in the virtual machine travel across the screen at different speeds.

If your guest virtual machine's operating system is Linux-based, the following workaround may reduce the mouse control issue. Enter the following on the guest's command line:

```
# xset m 1 1
```

6.2.12. German Keyboard Has Incorrect Key Outputs in Virtual Machine Console

When using a German keyboard with the Virtual Machine console, the key output is incorrect. Changing the keyboard setting for the server pool from `en-us` to `de` does not correct this issue. This is an issue with TightVNC.

Workaround: Configure RealVNC instead of TightVNC. See [Installing and Configuring a VNC Viewer](#) for information on configuring a VNC Viewer.

6.2.13. Virtual Machine IP Address Not Displayed in Info Tab

The **Info** tab for a virtual machine does not display the virtual machine's IP address. The IP address for a virtual machine is only displayed if the paravirtual drivers are installed.

Workaround: Install the Paravirtual drivers in the virtual machine's operating system. See [Installing Paravirtualized Drivers](#) for information on installing the Paravirtual drivers on Linux-based operating systems.

6.2.14. Windows Server 2008 R2 x64 HVM Guests Do Not Cleanly Shut Down

Windows Server 2008 Release 2 64-bit hardware virtualized guests fail to shut down cleanly. After the guest has been shut down, and started again, Windows reports that it was not shut down cleanly.

This is not an issue for Windows Server 2008 Release 2 32-bit hardware virtualized guests with paravirtualized drivers (PVHVM).

6.2.15. New Disks Displayed with Yellow Icon in Windows Guests

When you add a new disk to a virtual machine and refresh the device manager, the new disk is displayed with a yellow mark. This occurs in Microsoft Windows guests that have the Oracle VM Windows Paravirtual Drivers for Microsoft Windows Release 2.0.7 installed.

6.2.16. New Disks Are Not Automatically Detected in Windows 2008 Guests

When you add a new disk to a virtual machine, the new disk is not automatically detected. This occurs in Microsoft Windows 2008 Release 2, 64-bit guests that have the Oracle VM Windows Paravirtual Drivers for Microsoft Windows Release 2.0.7 installed.

Workaround: After you add a new disk, scan for new hardware changes using **Server Manager > Disk Drives > Scan for hardware changes**.

6.3. Networks

This section contains the known issues and workarounds related to networks and networking.

6.3.1. Network Card Limit in Virtual Machines

Oracle VM Manager supports eight network cards for each HVM virtual machine as outlined in [Table 5 “Virtual machine maximums”](#). However, the system library does not allow users to add more than *three* network cards when creating a virtual machine from installation media.

Workaround: After the virtual machine is created, add up to *five* new network cards by editing the virtual machine in Oracle VM Manager.

6.3.2. ARP Packet Checksum Errors

VLANs over bond mode 6 (balance-alb) bridge interface are not supported as this mode is incompatible with VLAN bridge interfaces.

Workaround: There are two workarounds for this problem:

- Use bond mode 6 as a bridge interface; do not use VLANs over bond mode 6.
- Use VLANs over bond modes (1=active-backup or 4=802.3ad) as a bridge interface.

6.3.3. Changing Cluster Heartbeat Network Does Not Reflect New IP Address

If you move the Cluster Heartbeat network role to another network, with a different IP address, the change is not reflected in the Oracle VM Servers.

Workaround: Edit the `/etc/ocfs2/cluster.conf` file on each Oracle VM Server in the network to reflect the new IP address, and restart each Oracle VM Server.

6.4. Storage

This section contains the known issues and workarounds related to storage.

6.4.1. Unclean File System Causes Errors When Used as a Server Pool File System

If a server pool file system is not clean (contains existing files and server pool cluster information) and used to create a server pool, a number of errors may occur.

- A server pool is created when the file system is discovered named *Unknown pool found for discovered Pool FS*. The server pool cannot be edited or used. The following error is displayed:

```
OVMRU_002037E repository_name - Cannot present the Repository to server: server_name.
Both server and repository need to be in the same cluster.
```

- Cannot create a server pool using the file system. The following error is displayed:

```
OVMAPI_4010E Attempt to send command: create_pool_filesystem to server: server_name failed.
OVMAPI_4004E Server Failed Command: create_pool_filesystem ... No such file or directory
```

- Cannot delete a server pool file system using the Physical Disks tab in the Hardware view. The following error is displayed:

```
"VALUEERROR: UNKNOWN ERROR: 'BACKING_DEVICE'"
```

- An OCFS2-based storage repository becomes orphaned (the clusterId that was used when the OCFS2 file system was created no longer exists), you cannot mount or refresh the repository, and the following error is displayed:

```
"OVMRU_002037E Cannot present the Repository to server: server_name. Both server and repository
need to be in the same cluster."
```

Workaround: Clean the file system of all files before it is used as a server pool file system.

6.4.2. Rescanning a LUN Does Not Show the New Size of a Resized LUN

When you resize a LUN and rescan the physical disks on the storage array, the new size is not reflected in the Oracle VM Manager UI in the Physical Disks tab in the Hardware view.

6.4.3. Local SAS Hard Disks Not Supported for Storage

If you use an Oracle VM Server with local SAS hard disks installed, empty disks of this type are not discovered in Oracle VM Manager and therefore cannot be used as local storage. This is caused by the fact that local SAS disks are not associated with a (local) storage array. SAS hard disks can therefore only be used for installing Oracle VM Server on them; they cannot be used for storage repositories, server pool file systems or raw LUNs as virtual machine disks.

6.4.4. Booting Server from Multipath SAN Is Not Supported

Oracle VM has multipath storage access enabled by default, and also supports booting from a SAN in single-path configuration. However, booting from a multipath SAN is not supported.

Workaround: If you need Oracle VM Servers to boot from SAN, configure storage access with a single physical path. Make the necessary adjustments to enable booting from SAN: set the BIOS to use the host bus adapter as a boot device, and so on. The disk must appear in the installer as an *sd[x]* device, not as an *mpath[x]* device.

6.4.5. Blacklisting of System Disks for Multipathing Fails

In Oracle VM, system disks of Oracle VM Servers are automatically blacklisted in the default multipath configuration. However, in some installations the system disks are not added correctly to the */etc/blacklisted.wwids* file. The problem is caused by a mismatch between the disk ID listed in the device mapper and the ID used by the installer.

Even if the blacklisting of system disks fails, Oracle VM functionality is not impacted, since the disks in question are not multipathed and therefore cannot be assigned to virtual machines in Oracle VM Manager.

This issue occurs only on Oracle VM Servers upgraded from an earlier Oracle VM 3.0.x release using a Yum repository. It does not occur if the Oracle VM Server was upgraded using the Oracle VM Server CD/ISO method.

Workaround: To correct the blacklisting configuration, manually update the `/etc/blacklisted.wwids` file after installation. If you choose to do so, replace the disk ID listed with its correct SCSI ID. You can retrieve the SCSI ID with this command: `scsi_id -gus /block/sd[x]`.

6.4.6. Black Listing of System Disks for Legacy LSI MegaRAID Controllers Not Supported

Oracle VM Server cannot add the system disks for Legacy LSI MegaRAID (Dell PERC4) bus controllers to the `/etc/blacklisted.wwids` file, so the disks are not blacklisted in the multipath configuration. This occurs because the bus controllers are not capable of returning a unique hardware ID for each disk. Using system disks on Legacy LSI MegaRAID (Dell PERC4) bus controllers is therefore not supported.

6.4.7. Blacklisting of System Disks for Multipathing Fails on HP Smart Array (CCISS) Disk Devices

Installing Oracle VM Server on an HP Smart Array (CCISS) fails to blacklist system disks (they are not included in the `/etc/blacklisted.wwids` file). Messages similar to the following are logged in the `/var/log/messages` file:

```
multipathd: /sbin/scsi_id exited with 1
last message repeated 3 times
```

CCISS disks are only supported for installing Oracle VM Server. If you want to install Oracle VM Server on a CCISS disk, use the workaround below. CCISS disks are not supported when used for storage repositories, raw disks for virtual machines, or server pool file systems.

Workaround: Configure multipathing to blacklist the CCISS system devices by adding a new line to the `multipath.conf` file:

```
# List of device names to discard as not multipath candidates
#
## IMPORTANT for OVS do not remove the black listed devices.
blacklist {
    devnode "^(ram|raw|loop|fd|md|dm-|sr|scd|st|nbd)[0-9]*"
    devnode "^hd[a-z][0-9]*"
    devnode "^etherd"+          devnode "^cciss!c[0-9]d[0-9]*"    <<====
    %include "/etc/blacklisted.wwids"
}
```

6.4.8. Multi-homed NFS Shares Are Not Supported

When an NFS file server has two IP addresses, it cannot expose the same file system over both interfaces. This situation would occur if you configure both IP addresses as separate access hosts; for example to provide access to different Oracle VM Servers via different paths. As a result, the same file system would correspond with two different storage object entries, each with a different path related to each of the IP addresses. As a storage server can only be represented by one object, this configuration is not supported in Oracle VM Release 3.0.3.

Workaround: Configure only one access host per storage server.

6.4.9. Create Physical Disk Icon Invalid Unless a Volume Group Selected

In the **Storage** view for a storage array, the **Physical Disks** tab contains a **Create Physical Disk** icon. This icon does nothing unless a volume group is selected in the table.

Workaround: Select a volume group in the table, then click the **Create Physical Disk** icon.

6.4.10. Refreshing a NAS-based File System Produces Invalid/Overlapping Exports

When a NAS-based file system is refreshed, it may produce invalid or overlapping exports. During a file system refresh job, all mount points defined in the NAS-based file server's exports file are refreshed, even file systems that are not intended to be used in Oracle VM environments.

Top level directories which also contain subdirectories in the exports file may also cause problems, for example, if an export file contains /xyz as an export location, and also contains /xyz/abc. In this case, the following error may be displayed during a refresh file system job:

```
OVMRU_002024E Cannot perform operation. File Server: server_name, has invalid exports.
```

Workaround: For the second issue, to work around this problem, do not export top level file systems in the NAS-based file server's exports file.

6.4.11. Expanding the Storage Array folder in the Navigation Pane Causes UI Hang

If you click on the Storage Array folder in the Storage tab of the Hardware view while a discovery job is in progress that involves discovering storage array objects, the Oracle VM Manager UI hangs. For example, if you discover an Oracle VM Server which has storage connected to it, then click Hardware > Storage and select the Storage Array folder, the UI hangs.

Workaround: Wait until all storage discovery jobs are complete before expanding the Storage Array folder.

6.4.12. Dom0 Memory Requires 350 MB of Memory per 100 LUNs

For every 100 LUNs on an iSCSI target, you should allocate at least 350MB of Dom0 memory. For example, to support 1,000 LUNs, you should allocate at least of 4GB memory to Dom0.

7. Upgrading Oracle VM

Oracle VM Release 3.0 is not backwardly compatible with previous Oracle VM releases. If you are using Oracle VM Release 2.x you cannot upgrade to Release 3.0.3. You must reinstall your Oracle VM Servers and Oracle VM Manager. You can however upgrade between Oracle VM 3.x releases, for example, upgrading from Oracle VM Release 3.0.1 to 3.0.2. See the [Oracle VM Installation and Upgrade Guide](#) for information on upgrading between Oracle VM 3.0 releases.

8. 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>.

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