Oracle® VM

Server Release Notes

Release 2.1

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This document contains information on Oracle VM Server Release 2.1.5 and supersedes the product documentation. This document contains last-minute information that could not be included the Oracle VM Server documentation. Read this document before installing Oracle VM Server. 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/

The following topics are contained this document:

- Introduction
- Hardware Requirements
- Dom0 Memory Settings
- Supported Guest Operating Systems
- Known Limitations and Workarounds
- Documentation Accessibility

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 Manager
- Oracle VM Server

This document contains last-minute release information on Oracle VM Server. See the *Oracle VM Manager Release Notes* for last-minute release information on Oracle VM Manager.

2 Hardware Requirements

This release of Oracle VM Server supports i686 and x86_64 host hardware only. Oracle VM Server requires a 32- or 64-bit processor with at least an i686-class processor on the host computer. This includes all Intel Pentium Pro or newer, and all AMD Athlon/Duron processors and newer. At least a Pentium 4 or Athlon CPU is recommended.

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For hardware virtualized (unmodified) guest operating systems (for example, Microsoft Windows), a CPU with hardware virtualization support is required. This includes some Intel Pentium D, Core, Core2 and Xeon models, and some AMD Athlon and Opteron models. This feature may also need to be enabled in the BIOS. Please refer to your processor documentation for information on whether your processor supports hardware virtualization and how to enable it in the BIOS.

A dual core CPU or multiple CPUs are recommended to run multiple guests.

The minimum memory requirement is 1GB RAM, although it is recommended you have a computer with at least 2GB RAM. Guest memory requirements vary for each guest operating system. You should perform your own memory sizing for guest operating systems.

3 Dom0 Memory Settings

Oracle recommends you set the dom0 memory to 512 MB. This is set by default during installation. Change this setting by modifying the `dom0_mem` kernel parameter in the /boot/grub/menu.lst file.

4 Supported Guest Operating Systems

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

Table 1   64-bit CPU Supported Guest Operating Systems

Guest Operating Systems	Paravirtualized 32-bit	Paravirtualized 64-bit	Hardware Virtualized 32-bit	Hardware Virtualized 64-bit
RedHat Enterprise Linux 3.x	Yes*	No	Yes	Yes
Oracle Enterprise Linux Release 4.x RedHat Enterprise Linux 4.x	Yes*	Yes*	Yes	Yes
Oracle Enterprise Linux Release 5.x RedHat Enterprise Linux 5.x	Yes*	Yes*	Yes	Yes

Table 2   32-bit CPU Supported Guest Operating Systems

Guest Operating Systems	Paravirtualized 32-bit	Hardware Virtualized 32-bit
RedHat Enterprise Linux 3.x	Yes*	Yes
Oracle Enterprise Linux Release 4.x RedHat Enterprise Linux 4.x	Yes*	Yes
Oracle Enterprise Linux Release 5.x RedHat Enterprise Linux 5.x	Yes*	Yes

* Oracle Enterprise Linux paravirtualized drivers are available on the Oracle VM Server CD for Release 3 Update 9, and Release 4 Update 4 onwards. The drivers are also available on the Oracle Enterprise Linux Network (ULN).

The following guest operating systems have been tested and no issues have been found other than as stated in the Oracle VM documentation.

Table 3   Tested Guest Operating Systems

Guest Operating Systems	Hardware Virtualized 32-bit	Hardware Virtualized 64-bit
Microsoft Windows™ 2000	Yes	Yes
Microsoft Windows™ 2003	Yes	Yes
Microsoft Windows™ XP Pro	Yes	Yes
Microsoft Windows™ Vista	Yes	Yes
Microsoft Windows™ 2008 Service Pack 1	Yes	Yes

5 Known Limitations and Workarounds

This section contains information on known limitations and workarounds for Oracle VM Server for the following issues:

- Upgrade Oracle VM Manager to Enable New Features

- Unstable Network With e1000 Controller on Windows 2008 Guests

- Upgrading a Computer With OCFS2 Partitions Fails

- Cannot Use P2V Utility on Computer With Less Than 512MB RAM

- Disk Entries Out of Order in Guest Configuration File After Conversion With P2V Utility

- Guests With Local SCSI Disks Created With P2V Utility Fail File System Check

- Guest Clock Drift

- SELinux Support

- Duplicate IP Addresses in Guests

- CDROM in Paravirtualized Guest Configuration File Causes Guest Panic

- Cannot Create More Than Three Virtual Network Interfaces for Oracle Enterprise Linux Release 4 Update 5 Paravirtualized Guests

- Memory Size Limit For Paravirtualized Guests

- Network Latency With Hardware Virtualized Guests

- Network Latency Negative Number With Windows Guests With More Than One VCPU

- Paravirtualized Guest for Oracle Enterprise Linux Release 4 Update 4

- Live Migration Fails Over SSL After Upgrade from 2.1.1

- Live Migration of a Hardware Virtualized Guest with Unmatched NX Bit Settings Fails

- OCFS2 Cluster Cannot be Mounted

- A Virtual Machine Server Started Before The Server Pool Master Does Not Join The Domain in an OCFS2 Cluster

- Installing kdump

5.1 Upgrade Oracle VM Manager to Enable New Features

To use the new features in Oracle VM Server Release 2.1.2 in Oracle VM Manager, you must upgrade Oracle VM Manager to Release 2.1.2.

5.2 Unstable Network With e1000 Controller on Windows 2008 Guests

Unstable network connections may occur on Microsoft Windows 2008 guest virtual machines using the e1000 network device emulator (controller). The following network issues may occur:

- The `net use` command may fail or disconnect.

- The network may become unreachable.

- Network packets may become lost.

Workaround: Change the `FlowControl` and `LargeSendOffload(IPv4)` parameters for the e1000 driver to the following settings:

- `FlowControl` from `Disabled` to `Tx & Rx Enabled`.

- `LargeSendOffload(IPv4)` from `Enabled` to `Disabled.`

To change the driver parameters:

1. Open **Device Manager**.

2. Double-click on **Network adapters**.

3. Double-click on **Intel(R) PRO/1000 Network Connection**.

4. Select the **Advanced** tab.

5. Change the settings as described above and click **OK**.

5.3 Upgrading a Computer With OCFS2 Partitions Fails

Upgrading to Oracle VM Server Release 2.1.2 fails on a computer which has an OCFS2 clustered file system mounted using the /etc/fstab file. A message similar to the following is displayed:

```
Error mounting device device as /OVS:
Invalid argument
```

```
This most likely means this partition has not been formatted
Press OK to reboot your server
```

Workaround: Remove the OCFS2 file system. To remove the OCFS2 file system:

1. Remove the Oracle VM Server Release 2.1.2 CD and restart the computer.

2. Oracle VM Server is started. Log in to Oracle VM Server and comment out the entries in the /etc/fstab file for the OCFS2 file systems.

3. Insert the Oracle VM Server CD in the CDROM drive, and restart the computer.

The upgrade completes without the error.

5.4 Cannot Use P2V Utility on Computer With Less Than 512MB RAM

The P2V utility fails to start on a computer with less than 512MB of RAM. The kernel panics with an error similar to:

```
VFS: Cannot open root device "<NULL>" or unknown block(0,21)
Please append a correct "root=" boot option
Kernel panic - not syncing: VFS: Unable to mount root fs on unknown-block(0,21)
```

5.5 Disk Entries Out of Order in Guest Configuration File After Conversion With P2V Utility

After converting a computer with sda as the boot device to a hardware virtualized guest, the guest does not start (Power On). The computer may have a configuration similar to:

- The boot device is sda

- The secondary disk is hda

The P2V utility creates a guest configuration file entry similar to:

```
disk =
['file:/OVS/running_pool/myGuest/System-hda.img,hda,w',
'file:/OVS/running_pool/myGuest/System-sda.img,hdb,w',
]
```

The disk entries in the guest configuration file are not in the correct order.

Workaround: Correct the disk order in the guest configuration file (vm.cfg), for example:

```
disk =
['file:/OVS/running_pool/myGuest/System-hda.img,hdb,w',
'file:/OVS/running_pool/myGuest/System-sda.img,hda,w',
```

5.6 Guests With Local SCSI Disks Created With P2V Utility Fail File System Check

An Oracle Enterprise Linux Release 4 guest with a local SCSI disk created with the P2V utility may fail the file system check when the guest is started. This occurs if a non-boot disk is configured as a SCSI disk in the guest configuration file. The error displayed is similar to the following:

```
Checking filesystems
/boot: clean, 35/130560 files, 31002/522080 blocks
fsck.ext3: Unable to resolve 'LABEL=/export0'
```

```
*** An error occurred during the file system check.
*** Dropping you to a shell; the system will reboot
*** when you leave the shell.
*** Warning -- SELinux is active
*** Disabling security enforcement for system recovery.
*** Run 'setenforce 1' to reenable.
Give root password for maintenance
```

Workaround: Comment out the SCSI disk entry in the /etc/fstab file.

Alternatively, create a new initrd image with the /sbin/mkinitrd script using the sym53c8xx module. The sym53c8xx module is for the LSI Logic/Symbios Logic 53c895a SCSI controller, which is the SCSI controller used for guests. To create a new initrd image on Oracle Enterprise Linux Release 4, Update 7:

```
# grep ' /boot ' /proc/mounts > /dev/null 2>&1 || mount /boot
# mv /boot/initrd-`uname -r`.img /boot/initrd-`uname -r`.img.orig
# mkinitrd --with sd_mod --with=sym53c8xx /boot/initrd-`uname -r`.img `uname -r`
```

5.7 Guest Clock Drift

The system time of guest operating systems may drift at rate faster than the Network Time Protocol daemon (ntpd) can correct.

Workaround: For paravirtualized guests, set the value of /proc/sys/xen/independent_wallclock to 1. The default value is 0. For hardware virtualized guests, periodically run ntpdate to reset the system clock.

5.8 SELinux Support

SELinux is not included with this release and is not supported.

5.9 Duplicate IP Addresses in Guests

Creating guests using a virtual machine template which contains a MAC address may cause guests to have the same IP address, and therefore create a network conflict.

Workaround: Use unique MAC addresses for each guest. Alternatively create guests in Oracle VM Manager.

5.10 CDROM in Paravirtualized Guest Configuration File Causes Guest Panic

A paravirtualized guest which includes a CDROM drive in the configuration file causes guest panic.

Workaround: Remove the CDROM definition from the guest configuration file.

5.11 Cannot Create More Than Three Virtual Network Interfaces for Oracle Enterprise Linux Release 4 Update 5 Paravirtualized Guests

Only three vifs (Virtual Network Interfaces) are supported with Oracle Enterprise Linux Release 4 Update 5 paravirtualized guests. If more than three vifs are created they cannot be initiated or detached.

5.12 Memory Size Limit For Paravirtualized Guests

The memory size for a 32-bit PAE paravirtualized guest is limited to 63GB, even if the computer has more physical memory. For 64-bit paravirtualized guests, the limit for memory size is 510GB.

5.13 Network Latency With Hardware Virtualized Guests

Network latency with hardware virtualized guests with the database on an iSCSI storage volume may cause the guest to become unresponsive under heavy I/O loads.

Workaround: If `ip6tables` have been enabled, disable them. `ip6tables` are disabled by default during installation. For example

1. Edit the /etc/modprobe.conf file to include the following lines:

    ```
    alias net-pf-10 off
    alias ipv6 off
    ```

2. Edit the /etc/sysconfig/network file to set:

    ```
    NETWORKING_IPV6=no
    ```

3. Stop the ip6tables firewall:

    ```
    # /sbin/service ip6tables stop
    ```

4. Run the following command:

    ```
    # /sbin/chkconfig ip6tables off
    ```

5. Restart the network:

    ```
    # /sbin/service network restart
    ```

6. Reboot the computer.

5.14 Network Latency Negative Number With Windows Guests With More Than One VCPU

Network latency may result in a negative number with Windows guests when `vcpu` is set to a number larger than 1. For example, a ping to a remote IP address from a Windows guest may result in:

```
Reply from 192.168.2.1: bytes=32 time=-7639ms TTL=64
```

Workaround: Add the `/usepmtimer` parameter to the C:\boot.ini file of the Windows guest operating system, and reboot the guest.

See also Microsoft's Support article number 895980 at
http://support.microsoft.com/kb/895980.

5.15 Paravirtualized Guest for Oracle Enterprise Linux Release 4 Update 4

Oracle Enterprise Linux 4 Update 4 does not support a direct installation as a paravirtualized guest.

Workaround: Install as a hardware virtualized guest and convert it to a paravirtualized guest. See the *Oracle VM Server User's Guide*.

5.16 Live Migration Fails Over SSL After Upgrade from 2.1.1

Live Migration fails over SSL after upgrading from Oracle VM Server Release 2.1.1. The following error is displayed during live migration:

```
Error: can't connect: (113, 'No route to host')
```

Oracle VM Server Release 2.1.2 adds support for live migration over SSL. Live migration over SSL requires port 8003 to be open in the Oracle VM Server firewall. If you have upgraded from a previous Oracle VM Server release, the firewall settings are not changed and port 8003 may not be open to enable live migration over SSL.

Workaround: Open port 8003 in the Oracle VM Server firewall with the system-config-securitylevel utility. To start the system-config-securitylevel utility, enter

```
# system-config-securitylevel
```

If you have manually configured the Oracle VM Server firewall, the system-config-securitylevel utility may override those settings.

5.17 Live Migration of a Hardware Virtualized Guest with Unmatched NX Bit Settings Fails

Live migration of a hardware virtualized guest from a computer that has NX bit (No eXecute) enabled to one that does not, fails. *NX bit* may also be known as *XD bit* (eXecute Disable) in Intel CPUs.

To perform live migration of a hardware virtualized guest that has NX bit enabled requires both computers to support NX bit and have the feature enabled in the BIOS.

Workaround: If the CPU on both computers supports NX bit, make sure the feature is enabled in the BIOS of both computers. If the CPU on the target computer does not support NX bit, disable the feature in the BIOS of both computers.

5.18 OCFS2 Cluster Cannot be Mounted

An OCFS2 cluster cannot be mounted and displays the error:

```
Mounting repository @location from location...
mount.ocfs2: Transport endpoint is not connected while mounting location on
/OVS. Check 'dmesg' for more information on this error.
Failed to mount location at /OVS
```

Oracle VM Server Release 2.1.2 adds support for high availability using OCFS2 clusters. An OCFS2 cluster requires port 7777 to be open in the Oracle VM Server firewall. If port 7777 is not open in the firewall, mounting the cluster fails.

Workaround: Open port 7777 in the Oracle VM Server firewall with the system-config-securitylevel utility. To start the system-config-securitylevel utility, enter

```
# system-config-securitylevel
```

If you have manually configured the Oracle VM Server firewall, the system-config-securitylevel utility may override those settings.

5.19 A Virtual Machine Server Started Before The Server Pool Master Does Not Join The Domain in an OCFS2 Cluster

In an HA-enabled server pool, if a Virtual Machine Server in an OCFS2 cluster is started *before* the Server Pool Master, the Virtual Machine Server does not automatically join the domain.

Workaround: There are a number of ways to resolve this issue. When both the Server Pool Master and Virtual Machine Server are started perform one of the following:

- Log in to Oracle VM Manager and select the **Server Pools** tab. Select the server pool and click **Edit**. Click the **Check** button in the **High Availability Infrastructure** field. Check the **Enable High Availability** check box. Click **Apply** or **OK**.

- On the Server Pool Master run the script:

  ```
  # /opt/ovs-agent-2.2/utils/do_rpc.py ha_setup_cluster_infrastructure
  ```

- On the Virtual Machine Server restart the Oracle VM Agent:

  ```
  # service ovs-agent restart
  ```

5.20 Installing kdump

If you need to install kdump (the Linux crash dumping utility) it is available on the Oracle VM Server CD. To install kdump, insert the Oracle VM Server CD in the CD drive, and enter the following commands:

```
# mkdir /mnt/cd
# mount /dev/cdrom/ /mnt/cd
# cd /mnt/cd/Server
# rpm -i busybox-1.2.0-3.i386.rpm
# rpm -i kernel-kdump-2.6.18-8.1.15.0.16.el5.i686.rpm
# rpm -i kexec-tools-1.101-194.4.el5.0.3.i386.rpm
```

To enable kdump on each reboot, add the parameter `crashkernel=128M@16M` to the `kernel` line in the /boot/grub/grub.conf file, for example:

```
kernel /xen.gz dom0_mem=512M ro crashkernel=128M@16M
```

5.21 Cannot Install kdump on Oracle Enterprise Linux or Red Hat Enterprise Linux 5.x Guests

You cannot install the kdump crash dumping utility on Oracle Enterprise Linux and Red Hat Enterprise Linux 5.x guests.

5.22 Cannot Create Red Hat Enterprise Linux 3.x 64-bit Guests

Cannot create a Red Hat Enterprise Linux 3.x 64-bit hardware virtualized guest.

Cannot boot a Red Hat Enterprise Linux 3.x 64-bit hardware virtualized guests created in Oracle VM Server Release 2.1 in Oracle VM Server Releases 2.1.1, 2.1.2 or 2.1.5.

This issue occurs in Oracle VM Server Releases 2.1.1, 2.1.2, and 2.1.5. It does not occur in Oracle VM Server Release 2.1.

Workaround: Include the `acpi=0` parameter in the guest's configuration file, or the `acpi=off` parameter at the command-line if using the virt-install command.

With this workaround implemented, the guest operating system shuts down normally when initiated from Oracle VM Manager, but there may be a longer than normal delay before the virtual machine status changes from *Running* to *Powered Off*.

5.23 Cannot Create Red Hat Enterprise Linux 4.1 Guests

On some Intel machines, cannot create a Red Hat Enterprise Linux 4.1 hardware virtualized guest. The systems affected are:

- Intel® Xeon® Processor 7000 series

- Intel® Xeon® Processor 5100 series

Intel® Xeon® Processor 5300 series computers are not affected.

Workaround: On Intel® Xeon® Processor 7000 series computers, include the `acpi=1` and `apic=1` parameters in the configuration file, or at the command-line if using `virt-install`.

Alternatively:

- Make sure `timer_mode=` is not set in the guest configuration file.

- Make sure `hpet=` is not set in the guest configuration file.

- Add the `nohpet` parameter to the guest grub.conf file.

5.24 Warning Displayed in dmesg on Dom0 When Using dm-nfs Block Devices

When using dm-nfs block devices for a guest, a warning may be displayed in dmesg on dom0:

```
device-mapper: nfs: not using n bytes in incomplete block at EOF
```

This error may occur after upgrading Oracle VM Server from Release 2.1.1 to 2.1.2 or to 2.1.5 and starting a guest that is on NFS storage. This error may also occur if the size of a guest template is not a multiple of 512 bytes.

Starting with Oracle VM Server Release 2.1.2, NFS storage can be used to emulate a guest's block devices. The block device emulator expects the size of the backing file on NFS storage to be a multiple of 512 bytes. This warning indicates that the backing file size is not an exact multiple of 512 bytes. The block device emulator rounds the file size down to the nearest multiple of 512 bytes, and ignores the remaining few bytes in the backing file. The emulated block device appears one sector smaller than expected.

If the size of the backing file has not changed since the guest was created, there should be no effect on the guest and the message can be ignored. If the backing file was inadvertently scribbled on, or truncated, there may be missing or corrupted data.

5.25 Sparse Files on an Ext3 File System Results in Data Loss

Sparse files on an ext3 file system may result in data loss during a system failure. The following error is displayed in dmesg:

```
lo10: sparse file detected, turning off fastfs mode
loop10: dropped 0 extents
```

In this release of Oracle VM Server, you cannot use sparse files on an ext3 file system.

Workaround: Use non-sparse files.

5.26 Oracle ASM Errors

The `oracleasm createdisk` command fails for Oracle Enterprise Linux Release 4 and Red Hat Enterprise Linux Release 4 paravirtual guests, for example, if a partition exists for `/dev/xvdb1`, the following command should succeed, but does not

```
# /etc/init.d/oracleasm createdisk VOL1 /dev/xvdb1
Marking disk "/dev/xvdb1" as an ASM disk: asmtool: Device "/dev/xvdb1" is not
a partition
                                                        [FAILED]
```

Workaround: Run the asmtool command with the `-a force=yes` parameter to ignore the partition check, for example

```
# asmtool -C -l /dev/oracleasm -n VOL1 -s /dev/xvdb1 -a force=yes
/etc/init.d/oracleasm scandisks
```

The `oracleasm scandisks` command fixes permissions once the disk is created.

5.27 Logical Volume Manager Setup During Installation

You cannot set up Logical Volume Manager (LVM) during the Oracle VM Server installation.

Workaround: Use pre-configured LVM volumes. Alternatively, you can temporarily exit the Oracle VM Server installer and create an LVM configuration from scratch. During the Oracle VM Server installation, press **Alt**+**F2** to use the terminal, and run the `lvm` command. When you have finished creating the LVM configuration, press **Alt**+**F1** to return to the Oracle VM Server installation.

5.28 xm dump-core Fails

The `xm dump-core` command fails on 64-bit guests.

The `xm dump-core` command does generate a full core dump in this release of Oracle VM Server.

5.29 Guest Restore Errors

While restoring a guest, the following errors (in the `dmesg`) may be displayed. These errors are harmless and can be ignored.

```
Call Trace:
 <IRQ>  [<ffffffff800b2c85>] softlockup_tick+0xdb/0xed
 [<ffffffff800933d1>] update_process_times+0x42/0x68
 [<ffffffff80073d97>] smp_local_timer_interrupt+0x23/0x47
 [<ffffffff80074459>] smp_apic_timer_interrupt+0x41/0x47
 [<ffffffff80068ae4>] default_idle+0x0/0x50
 [<ffffffff8005bcc2>] apic_timer_interrupt+0x66/0x6c
 <EOI>  [<ffffffff80068b0d>] default_idle+0x29/0x50
 [<ffffffff80046f9c>] cpu_idle+0x95/0xb8
 [<ffffffff80073bb5>] start_secondary+0x45a/0x469
```

5.30 Creating Hardware Virtualized Guests

If a virtualized guest works as a paravirtualized guest, it does not automatically mean that it works with, or as, a hardware virtualized guest. This section lists some important considerations when creating hardware virtualized guests.

5.30.1 Using DHCP

If you set up dom0 to use DHCP to obtain its IP address, you may have unexpected results as the network setup may become undefined for each domU if the DHCP lease expires.

5.30.2 Disk Partition Emulation

Do not use disk partition emulation in the configuration file when creating a hardware virtualized guest.

A paravirtualized guest can be configured to emulate a disk partition with the `disk` parameter in the configuration file, for example

```
disk=['phy:/dev/hdb1,hdb,w']
```

Can be configured to emulate `hdb` to be `hdb1` by changing the configuration parameter to

```
disk=['phy:/dev/hdb1,hdb1,w']
```

The hypervisor emulates a partition table to create a *fake* `/dev/hdb` and the disk appears as `/dev/hdb1`.

In a hardware virtualized guest, this is not possible. You must specify whole disks in the configuration file, not partitions. Oracle recommends always using whole disks for the second parameter.

This does not effect the first parameter, which can be any whole disk, partition or file visible to dom0.

5.30.3 Copying File Systems

Do not use the rsync command to copy a file system from one computer to another.

Workaround: Use the dd utility to copy the entire operating system locally, or over the network, for example

```
# dd if=/dev/vgxen/lvol0 | ssh <target host for copied domU> dd
of=/dev/vgxen/lvol0
```

5.30.4 Sharing the CDROM

Do not share or use the *real* dom0 CDROM device.

5.30.5 Fedora 7 GA Kernel

Do not use the Fedora 7 GA (Release 2.6.21-1.3194.fc7) kernel when using the virt-install command-line tool. The Fedora 7 GA kernel is not supported in this release.

6 Documentation Accessibility

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