Oracle® VM: Utilities Guide for Release 3

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Abstract

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The Oracle VM Utilities Guide is your reference to the administrative and diagnostic command line tools provided as an add-on or as part of the Oracle VM installation. The command line tools described in this guide are intended to help administrators perform certain tasks and collect troubleshooting information more easily. The operations made possible by these tools are typically not available through the Oracle VM Manager user interface. Usage of the tools requires root privileges on the system.

1. Audience

This document is intended for Oracle VM administrators with privileged access to the physical and virtual resources of the Oracle VM environment. This guide assumes that you have an in depth knowledge of Oracle VM (see the *Oracle VM User's Guide*), and that you are familiar with Oracle Linux system administration and Linux command line operation.

2. Documentation Accessibility

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

Access to Oracle Support

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

3. Related Documents

For more information, see the following documents in the Oracle VM Release 3 documentation.

- *Oracle VM Release Notes*
- *Oracle VM Installation and Upgrade Guide*
- *Oracle VM Getting Started Guide*
- *Oracle VM User's Guide*
- *Oracle VM Windows Paravirtual Drivers Installation Guide*
- *Oracle VM Security Guide*

You can also get the latest information on Oracle VM by going to the Oracle virtualization Web site:

http://www.oracle.com/virtualization
4. Command Syntax

Oracle Linux command syntax appears in monospace font. The dollar character ($), number sign (#), or percent character (%) are Oracle Linux command prompts. Do not enter them as part of the command.

The following command syntax conventions are used in this guide:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>backslash \</td>
<td>A backslash is the Oracle Linux command continuation character. It is used in command examples that are too long to fit on a single line. Enter the command as displayed (with a backslash) or enter it on a single line without a backslash:</td>
</tr>
<tr>
<td></td>
<td>dd if=/dev/rdsk/c0t1d0s6 of=/dev/rst0 bs=10b \</td>
</tr>
<tr>
<td></td>
<td>count=10000</td>
</tr>
<tr>
<td>braces {}</td>
<td>Braces indicate required items:</td>
</tr>
<tr>
<td></td>
<td>.DEFINE {macro1}</td>
</tr>
<tr>
<td>brackets [ ]</td>
<td>Brackets indicate optional items:</td>
</tr>
<tr>
<td></td>
<td>cvtcrt termname [outfile]</td>
</tr>
<tr>
<td>ellipses ...</td>
<td>Ellipses indicate an arbitrary number of similar items:</td>
</tr>
<tr>
<td></td>
<td>CHKVAL fieldname value1 value2 ... valueN</td>
</tr>
<tr>
<td>italics</td>
<td>Italic type indicates a variable. Substitute a value for the variable:</td>
</tr>
<tr>
<td></td>
<td>library_name</td>
</tr>
<tr>
<td>vertical line</td>
<td>A vertical line indicates a choice within braces or brackets:</td>
</tr>
<tr>
<td></td>
<td>FILE filesize [K</td>
</tr>
</tbody>
</table>

5. Conventions

The following text conventions are used in this document:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>boldface</td>
<td>Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.</td>
</tr>
<tr>
<td>italic</td>
<td>Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.</td>
</tr>
<tr>
<td>monospace</td>
<td>Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.</td>
</tr>
</tbody>
</table>
Chapter 1. Oracle VM Utilities Overview

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The Oracle VM Utilities are a collection of command line scripts that allow you to perform a set of basic management tasks on Oracle VM Servers and virtual machines in an Oracle VM environment. These utilities are particularly useful to administrators who need to execute certain operations quickly and/or repeatedly. Using the command line scripts makes these tasks quicker and easier to perform.

Warning

The command line scripts in the Oracle VM Utilities are provided as-is for your convenience. With the exception of the operations required to perform hard partitioning as described in the Oracle VM User's Guide and in the whitepaper Hard Partitioning With Oracle VM Server for x86 located at http://www.oracle.com/technetwork/server-storage/vm/ovm-hardpart-168217.pdf, they are not officially and formally supported by Oracle.

1.1. Downloading and Installing Oracle VM Utilities

The Oracle VM Utilities are available for download as a .zip file via the Oracle VM Downloads page:


The sections below describe how and where to install these utilities. An overview of the installation directory structure and files is also provided.

1.1.1. Installing Oracle VM Utilities on Oracle VM Manager

When installing Oracle VM Utilities on the same server as Oracle VM Manager, it is recommended that you put them in the software directory of the Oracle VM Manager application. The Oracle VM Utilities are bundled in a .zip archive. To install, simply download the archive and extract in the appropriate directory.

Note

In the example below, we downloaded the .zip file to a file server that is also accessible from the server where we intend to install the Oracle VM Utilities. We mount this network drive on the server file system and copy the .zip file into the installation directory, where we unzip it. Depending on your local configuration and preferences you may use different methods to place the downloaded file in the installation directory.

`# cp ovm_utils_archive.zip /u01/app/oracle/ovm-manager-3/
`  
`# cd /u01/app/oracle/ovm-manager-3`
Installing Oracle VM Utilities on Oracle Linux

# unzip ovm_utils_archive.zip

At this point, the command line scripts are ready to use. Note that these scripts execute a Java program and use the default Java VM on the host computer. On the server running Oracle VM Manager, the appropriate Java VM is installed as part of the Oracle VM Manager application in /u01/app/oracle/java. No further configuration is required.

1.1.2. Installing Oracle VM Utilities on Oracle Linux

When installing Oracle VM Utilities on an Oracle Linux server or desktop computer, you may put them in the installation directory of your choice; for example: /usr/local/bin. The Oracle VM Utilities are bundled in a .zip archive. To install, simply download the archive, copy and extract in the appropriate directory.

# cp ovm_utils_archive.zip /usr/local/bin/oracle/
# cd /usr/local/bin/oracle/
# unzip ovm_utils_archive.zip

Caution

Oracle VM Utilities do not work with the Open JDK or GNU Compiler for Java (GCJ). You must install a standard Java VM, version 1.6.x, and make sure it is defined as the default Java VM by the JAVA_HOME environment variable or included in the PATH variable on your system.

The command line scripts in Oracle VM Utilities execute a Java program and use the default Java VM on the host computer. To verify the exact path to the Java executable and the active Java version, use the following commands:

# which java
/usr/java
# java -version
java version "1.6.0_26"
Java(TM) SE Runtime Environment (build 1.6.0_26-b03)
Java(TM) Server VM (build 20.1-b02, mixed mode)

If a standard Java VM, version 1.6.x, is not available on your system, download and install the version suited for your platform from http://java.com/en/download/. To ensure that the appropriate Java VM version is used, set the JAVA_HOME and PATH variables as follows:

1. Edit the Oracle Linux shell profile.

   # vi /etc/profile
   # vi /etc/bashrc

2. Add the lines below to the profile. If your Java path does not match /usr/java, replace with the actual path on your system.

   JAVA_HOME=/usr/java
   export JAVA_HOME
   PATH=$PATH:$JAVA_HOME/bin
   export PATH

3. Save the file. Log out and log back in to activate your changes.

4. Verify the Java path and version again, to make sure that the correct Java VM is used.

   # which java
   /usr/java
At this point, the command line scripts are ready to use.

### 1.1.3. Directory Structure of Oracle VM Utilities

When you unzip the Oracle VM Utilities archive, a subdirectory named `ovm_utils` is created, containing these utility scripts:

- `ovm_managercontrol`
- `ovm_servercontrol`
- `ovm_vmcontrol`
- `ovm_vmdisks`
- `ovm_vmmessage`
- `ovm_poolcontrol`
- `ovm_repocontrol`

For each of these utility scripts, a *man page* is also included. These help files can be found in `.../ovm_utils/man/man8`.

```bash
# ls /u01/app/oracle/ovm-manager-3/ovm_utils/man/man8/
ovm_managercontrol.8  ovm_repocontrol.8  ovm_vmcontrol.8  ovm_vmmessage.8
ovm_poolcontrol.8      ovm_servercontrol.8  ovm_vmdisks.8
```

Use the `man` command to display the help; for example:

```bash
# man man/man8/ovm_servercontrol.8
```

### 1.2. Introduction to Oracle VM Utilities

The Oracle VM Utilities are command line scripts used to execute certain basic operations on your Oracle VM environment. These utilities make a connection to the Oracle VM Manager host server, using the server host name and an administrative user name and password. After authentication, commands can be submitted to Oracle VM Manager from the command line.

The Oracle VM Utilities are:

- **`ovm_servercontrol`**: command line script to perform administrative operations on a physical Oracle VM Server
- **`ovm_vmcontrol`**: command line script to perform administrative operations on a virtual machine
- **`ovm_vmdisks`**: command line script to list virtual and raw physical disks attached to a virtual machine in order to facilitate backup
- **`ovm_vmmessage`**: command line script to send and retrieve messages in the form of key/value pairs to and from a running virtual machine
- **`ovm_poolcontrol`**: command line script to perform administrative operations on a pool of Oracle VM Servers
1.3. Introduction to Oracle VM Guest Additions

The Oracle VM Utilities include a messaging tool, which allows sending key-value pairs to a virtual machine, or guest, and retrieve such messages from the guest. The `vmmessage` utility requires the Oracle VM Guest Additions to be installed on the guest side. The current edition of Oracle VM Guest Addition includes message channel and guest IP information. The Oracle VM Guest Additions allow direct integration between guest software and the virtualization layer, to assist in orchestration and automation of complex, multi-VM deployments.

A brief description of the installation, configuration and features of Oracle VM Guest Additions can be found in Chapter 3, *Using the Oracle VM Guest Additions*.

1.4. Introduction to Oracle VM Administrator Tool

The following is listed in the help page on the command line:

```
Usage: ./ovm_admin [options]

Options:
--help: Shows this message
--createuser: Create new Oracle VM Manager admin user
--deleteuser: <admin> Delete Oracle VM Manager admin user
--listusers: List Oracle VM Manager users
--modifyuser: Modify Oracle VM Manager user password
--lockusers: <tries> Max login tries before locking account. This setting is global.
--unlockuser: <admin> Unlock user account
--modifyds <SID> <host> <port> [type] Modify Data Store 'OVMDS'. Options of <type>:
  oracle, mysql
--listconfig: List configuration
--rotatelogsdaily: <time> Rotate Logs Daily (HH:MM)
--rotatelogsbyte: <size> Rotate Logs By Size (KB)
```

1.5. Introduction to Oracle VM Diagnostic Capture

For diagnostic purposes, Oracle Support Services use a script called `VMPInfo3` that automatically collects vital troubleshooting information from your Oracle VM environment. For detailed information about the script, its purpose and usage, please consult the support note with Doc ID 1364933.1. You can also find this document by logging on to My Oracle Support and searching the knowledge base for "vmpinfo3".
Chapter 2. Using the Oracle VM Utilities

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This chapter gives you more detail on using the Oracle VM Utilities, including command line examples.

The Oracle VM Utilities make a connection to the Oracle VM Manager host server, using the server host name and an administrative user name and password. Oracle VM Manager listens on port 54321 (TCP, local access only) or 54322 (Secure TCP). All utilities share a common set of parameters to connect to the Oracle VM Manager instance. The following parameters are required and used by each:

- `-u <user name of an Oracle VM Manager admin user>`
- `-p <password corresponding with the admin user name>`
- `-h <host name of the server running Oracle VM Manager>`

2.1. Using Oracle VM Manager Control

The `ovm_managercontrol` utility operates at the level of the Oracle VM Manager. It allows the administrator to execute basic commands applicable to the configuration of the entire environment managed by the Oracle VM Manager.

2.1.1. Command Line Options and Parameters of ovm_managercontrol

The `ovm_managercontrol` utility has the following command line options:

- `-u` user name of an Oracle VM Manager admin user (required)
- `-p` password corresponding with the admin user name (required)
- `-h` host name of the server running Oracle VM Manager (required)
Examples of ovm_managercontrol Usage

- **-X** use SSL to connect to Oracle VM Manager at tcp://host:54322
- **-k** name of the keystore file used for SSL
- **-P** password to open the keystore file
- **-G** enable GPG check
- **-K** URL to the GPG key
- **-B** base URL for the YUM server repository
- **-n** CPU compatibility group name
- **-s** name of the Oracle VM Server to add to or remove from a CPU compatibility group
- **-T** timeout in seconds for virtual machine console session (use together with -c getsessiontimeout/
  setsessiontimeout)
- **-c** console command (required)

**commands:** yuminfo, setupyum, addkeystore, keystoreinfo, createcpugroup, removecpugroup, addservertocpugroup, removeserverfromcpugroup, listcpugroups, getsessiontimeout, setsessiontimeout

**Notes:**
See the examples in the next section for typical combinations of parameters and options.

### 2.1.2. Examples of ovm_managercontrol Usage

Below are examples of ovm_managercontrol commands and their respective output.

- **Set up a keystore file for SSL connectivity and check the keystore settings:**

  ```bash
  # ./ovm_managercontrol -u admin -p password -h localhost -c addkeystore -k mykeystore.ks -P password
  Oracle VM Manager Control utility 0.5.2.
  Connected.
  Command : addkeystore
  Adding keystore.
  Restart of Oracle VM Manager is required for this setting to take effect.
  (/etc/init.d/ovmm stop ; /etc/init.d/ovmm start)
  Exit...
  # ./ovm_managercontrol -u admin -p password -h localhost -c keystoreinfo
  Oracle VM Manager Control utility 0.5.2.
  Connected.
  Command : keystoreinfo
  Key Store information :
  Key Path    : '/u01/app/oracle/ovm-manager-3/keystore/mykeystore.ks'
  Exit...
  ```

- **Configure the YUM repository for Oracle VM Server updates:**

  ```bash
  # ./ovm_managercontrol -u admin -p password -h localhost -c setupyum \http://yumserver.domain.com/repo -G -K http://secure.domain.com/key.gpg
  ```

- **Configure a CPU compatibility group and add an Oracle VM Server:**

  ```bash
  # ./ovm_managercontrol -u admin -p password -h localhost -c createcpugroup -n MyCPUgroup_Opteron
  ```
Using Oracle VM Server Control

Oracle VM Manager Control utility 0.5.2.
Connected.
Command: createcpugroup
  Creating CPU Compatibility Group 'MyCPUgroup_Opteron'.
Exit...

# ./ovm_managercontrol -u admin -p password -h localhost -c addservertocpugroup -s
  MyServer1 -n MyCPUgroup_Opteron
Oracle VM Manager Control utility 0.5.2.
Connected.
Command: addservertocpugroup
  Adding Server to CPU Compatibility group.
Exit...

- Display the CPU compatibility group configuration, that is: the compatibility groups and their member servers:

  # ./ovm_managercontrol -u admin -p password -h localhost -c listcpugroups
Oracle VM Manager Control utility 0.5.2.
Connected.
Command: listcpugroups
Group: MyCPUgroup_Opteron
  Server: MyServer1
  Server: MyServer2
  Server: MyServer3
  Server: MyServer6
  Server: MyServer7
  Server: MyServer8

Group: MyCPUgroup_Xeon
  Server: MyServer4
  Server: MyServer5
Exit...

2.2. Using Oracle VM Server Control

The \texttt{ovm\_servercontrol} utility operates on a physical Oracle VM Server. It allows the administrator to execute basic server commands on a given Oracle VM Server, query its status and retrieve essential information.

2.2.1. Command Line Options and Parameters of \texttt{ovm\_servercontrol}

The \texttt{ovm\_servercontrol} utility has the following command line options:

- \texttt{-u} user name of an Oracle VM Manager admin user (required)
- \texttt{-p} password corresponding with the admin user name (required)
- \texttt{-h} host name of the server running Oracle VM Manager (required)
- \texttt{-X} use SSL to connect to Oracle VM Manager at tcps://host:54322
- \texttt{-s} Oracle VM Server name
- \texttt{-I} Oracle VM Server ID
- \texttt{-P} agent password for the Oracle VM Server to be discovered (use together with \texttt{-c discover})
- \texttt{-r} storage repository name (for NFS export)
- \texttt{-i} ID of the NFS export
- \texttt{-o} options for the NFS export
Examples of ovm_servercontrol Usage

- **-C** client host name for the NFS export
- **-A** acknowledge events (use together with -c events)
  
  use `-A all` to acknowledge events for the Oracle VM Server and the virtual machines it hosts
- **-c** console command (required)

  **commands:** start, stop, restart, kill, discover, mainton, maintoff, status, info, events, lock, upgrade, refresh, list, listnfsexports, createnfsexport, deletenfsexport

**Note**

The `mainton` and `maintoff` commands activate or deactivate the Oracle VM Server maintenance mode.

The `discover` command performs a discovery operation on an Oracle VM Server that was not yet previously discovered by Oracle VM Manager.

The `upgrade` command initiates a yum upgrade on the given Oracle VM Server.

The `list` command does not need an Oracle VM Server name argument. It lists every Oracle VM Server registered with the system.

2.2.2. Examples of ovm_servercontrol Usage

Below are examples of `ovm_servercontrol` commands and their respective output.

- List all registered Oracle VM Servers:

  ```
  # ./ovm_servercontrol -u admin -p password -h localhost -c list
  
  Oracle VM Server Control utility 0.5.2.
  Connected.
  Command : list
  Server : 'OVS_01'
    ID     : '00:e0:81:4d:40:16:00:e0:81:4d:40:17:ff:ff:ff:ff'
    pool   : 'MyServerPool1'
    status : 'Running'
  
  Server : 'OVS_02'
    ID     : '00:e0:81:4d:5e:82:00:e0:81:4d:5e:83:ff:ff:ff:ff'
    pool   : 'unassigned'
    status : 'Running'
  
  Server : 'OVS_03'
    ID     : '00:e0:81:4d:5e:16:00:e0:81:4d:5e:17:ff:ff:ff:ff'
    pool   : 'MyServerPool1'
    status : 'Running'
  
  Server : 'OVS_04'
    ID     : '00:e0:81:4d:40:f5:00:e0:81:4d:40:be:00:e0:81:4d'
    pool   : 'unassigned'
    status : 'Running'
  
  Exit...
  ```

- Check the status of an Oracle VM Server:

  ```
  # ./ovm_servercontrol -u admin -p password -h localhost -s OVS_03 -c status
  
  Oracle VM Server Control utility 0.5.2.
  Connected.
  Command : status
  ```
Examples of ovm_servercontrol Usage

Server : 'OVS_03' status : 'Running' serverpool : 'MyServerPool1'.

- Display detailed information of an Oracle VM Server:
  
  # ./ovm_servercontrol -u admin -p password -h localhost -s OVS_01 -c info
  Oracle VM Server Control utility 0.5.2.
  Connected.
  Command : info
  Server : OVS_01
    Status : Running
    Management IP: 10.172.76.90
    Hostname : OVS_01
    ID : 00:e0:81:4d:40:16:00:e0:81:4d:40:17:ff:ff:ff:ff
    Pool : MyServerPool1
    CPU threads : 4
    CPU Usage : 1.877896
    Total Memory : 32767
    Usable Memory: 31261
    Maintenance : false
    Master Server: true
    Up to date : true
    Virtual Machines on this server :
      Name : 'MyVM01'
        Status : 'Stopped'
      Name : 'MyVM02'
        Status : 'Running'
  Exit...

- Restart an Oracle VM Server:
  
  # ./ovm_servercontrol -u admin -p password -h localhost -s OVS_02 -c restart
  Oracle VM Server Control utility 0.5.2.
  Connected.
  Command : restart
  restartserver 'OVS_02' completed.
  Exit...

- Expose an OCFS2 repository using NFS:
  
  ![Note]
  This example shows the creation of an NFS export and then lists the existing exports. The storage repository is exposed to two different clients, but then one export is deleted via its ID. The mount command at the end shows that the remaining export is still available.

  # ./ovm_servercontrol -u admin -p password -h localhost -c createnfsexport -s OVS_04 -C NFS_02 -o rw,no_root_squash -r MyIscsiRepo
  Oracle VM Server Control utility 0.5.2.
  Connected.
  Command : createnfsexport
  Creating nfs export for repository 'MyIscsiRepo' on server.
  Created repository export
  Exit...

  # ./ovm_servercontrol -u admin -p Manager1 -h localhost -c listnfsexports -s OVS_04
  Oracle VM Server Control utility 0.5.2.
  Connected.
  Command : listnfsexports
  NFS Exports :
    id : 0004fb0000230000978a28e2dc85e06b
    client : NFS_01
    options : 
    repository : MyIscsiRepo
  Exit...
Using Oracle VM Virtual Machine Control

2.3. Using Oracle VM Virtual Machine Control

The `ovm_vmcontrol` utility operates on a virtual machine (VM). It passes basic virtual machine control commands from the command line to Oracle VM Manager. It allows you to start, stop, suspend, resume, kill, restart a VM. It is also possible to simply query the status of the virtual machine (Running, Stopped), and retrieve essential VM information such as memory, server pool, number of virtual CPUs and so on.

2.3.1. Command Line Options and Parameters of ovm_vmcontrol

The `ovm_vmcontrol` utility has the following command line options:

- `-u` user name of an Oracle VM Manager admin user (required)
- `-p` password corresponding with the admin user name (required)
- `-h` host name of the server running Oracle VM Manager (required)
- `-X` use SSL to connect to Oracle VM Manager
- `-v` virtual machine name
- `-U` virtual machine UUID
- `-t` name of target Oracle VM Server for migration of a virtual machine (use together with `-c migrate`)
- `-s` comma separated list of physical thread numbers to bind virtual CPUs to (use together with `-c vcpuset`)
- `-T` tag list, a comma separated list of strings to be associated with a virtual machine as metadata (use together with `-c settags`)
- `-F` force the virtual disks associated with a virtual machine to be deleted (use together with `-c delete`)
- `-A` acknowledge virtual machine events (use together with `-c events`)
- `-c` console command (required)

commands: start, stop, suspend, resume, status, restart, kill, delete, info, fixcfg, events, lock, vcpuset, vcpuget, migrate, settags, gettags, list

Examples of ovm_vmcontrol Usage

Note

As you can see, the ovm_vmcontrol console command list contains a lock command. This special command allows you to lock a virtual machine for a certain period of time. When a virtual machine is locked by the utility, it is not possible for other tools or users (through the Oracle VM Manager user interface) to perform operations on that specific VM. This is particularly useful if you are an administrator and need to make a VM backup while the VM is stopped: you want to prevent anyone starting the VM before the backup finishes.

The list command does not need a VM name or UUID argument. It lists every VM and its status.

The fixcfg command verifies the vm.cfg file of the virtual machine and attempts to correct invalid entries. For example, an entry for vncpasswd will be cleared with this command, because the virtual machine console does not support this setting.

The vcpuset command hard-binds or pins virtual CPUs to threads. For example,

-\vcpuset -s (0,1,2)

physically binds vcpu0 to thread0, vcpu1 to thread1, vcpu2 to thread2. Use the vcpuget command to retrieve information about pinned vCPUs for the selected virtual machine.

The settags and gettags commands are used to manage tag metadata for a given virtual machine.

2.3.2. Examples of ovm_vmcontrol Usage

Below are examples of ovm_vmcontrol commands and their respective output.

- Display detailed information of a particular virtual machine:

```
# ./ovm_vmcontrol -u admin -p password -h localhost -v MyVM02 -c info
Oracle VM VM Control utility 0.5.2.
Connected.
Command : info
Virtual Machine : MyVM02
  Status : Running
  Memory : 1024
  Uptime : 83 Minutes
  Server : OVS_01
  Pool : MyServerPool1
  HA Mode: false
  VCPU : 2
  Type : Xen HVM
  OS : Oracle Linux 6
vminfo 'MyVM02' completed.
```

- Check the status of a particular virtual machine:

```
# ./ovm_vmcontrol -u admin -p password -h localhost -v MyVM02 -c status
Oracle VM VM Control utility 0.5.2.
Connected.
Command : status
Virtual Machine : 'MyVM02' status : 'Running' on server 'OVS_01' serverpool : 'MyServerPool1'.
```

- Stop a particular virtual machine:

```
# ./ovm_vmcontrol -u admin -p password -h localhost -v MyVM01 -c stop
Oracle VM VM Control utility 0.5.2.
Connected.
Command : stop
```
Using Oracle VM Retrieve Disk

Stop a particular virtual machine:

```
stopvm 'MyVM01' completed.
```

- **Start a particular virtual machine:**
  
  ```
  # ./ovm_vmcontrol -u admin -p password -h localhost -v MyVM01 -c start
  Oracle VM VM Control utility 0.5.2.
  Connected.
  Command : start
  startvm 'MyVM01' completed.
  ```

- **Lock a particular virtual machine:**
  
  ```
  # ./ovm_vmcontrol -u admin -p password -h localhost -v MyVM01 -c lock
  Oracle VM VM Control utility 0.5.2.
  Connected.
  Command : lock
  Locking VM 'MyVM01'
  Press Ctrl-C to unlock.
  ```

  The lock command will sleep until you press **Ctrl+C** to release the lock. If the `ovm_control` utility is killed, the VM would be unlocked as well.

2.4. Using Oracle VM Retrieve Disk

The `ovm_vmdisks` utility is designed to help the administrator make backups of virtual machines, particularly when the VM's virtual disks are files in a storage repository on a remote NFS storage server.

2.4.1. Command Line Options and Parameters of `ovm_vmdisk`

The `ovm_vmdisks` utility takes a virtual machine name or UUID and lists out every virtual disk file for that VM, as well as the virtual machine configuration (`.vm.cfg`) file. This allows you to take the file listings from the output of the utility and back them up to a server or tape.

The `ovm_vmdisks` utility has the following command line options:

- **-u** user name of an Oracle VM Manager admin user (required)
- **-p** password corresponding with the admin user name (required)
- **-h** host name of the server running Oracle VM Manager (required)
- **-X** use SSL to connect to Oracle VM Manager
- **-v** virtual machine name
- **-U** virtual machine UUID

If the virtual disks are actual physical devices directly attached to the VM, the utility lists the device mapper entry on the Oracle VM Server to which the VM is assigned. In case the virtual disks are files on an NFS server, the utility lists the NFS server name, mount point and file name/location.

2.4.2. Examples of `ovm_vmdisk` Usage

Below is an example of `ovm_vmdisk` usage. It shows a virtual machine with three disks, each attached in a different way:

```
# ./ovm_vmdisks -u admin -p password -h localhost -v MyVM01
Oracle VM Retrieve Disk utility 0.5.2.
Connected.
Virtual Machine : 'MyVM01' status : 'Running'.
```
As you can see in the console output, VM *MyVM01* is currently running. Note that backing up a running VM would be inconsistent, therefore it is highly recommended that you shut down the VM prior to making any backups. The console output shows that the virtual machine contains three disks, two virtual and one physical, and also provides the location of the virtual machine configuration file:

- **MyVM01_bootdisk**: a virtual disk on an ocfs2 storage repository. The ocfs2 repository was created on the device /dev/mapper/3300000006160a212

- **MyVM01_datadisk**: a virtual disk on an NFS storage server named nfs01. The full path to the virtual disk file on the NFS server is /mnt/vol2/repo03/VirtualDisks/0004fb0000120000f217eb8c0fa70eef.img

- **pd003**: a raw disk device at /dev/mapper/3300000009b7b2cc4

- **vm.cfg**: the virtual machine configuration file on NFS server nfs01. The full path to the configuration file is nfs01:/mnt/vol2/repo03/VirtualMachines/0004fb0000600008757e38248a544e6/vm.cfg

### 2.5. Using Oracle VM Virtual Machine Messaging

The ovm_vmmmessage utility lets you send a message to a running virtual machine, or to query the value of a message sent from within a virtual machine to Oracle VM Manager via the Oracle VM API messaging interface. These values are basic key/value pairs such as `foo=bar`.

New Oracle VM templates released by Oracle will contain a configuration utility called ovmd. This utility is used to perform first-boot installation configuration either locally from the virtual machine console or remotely through the messaging interface provided by this utility. The ovmd utility also allows the owner of the virtual machine to send messages back to Oracle VM Manager. For more information about ovmd, and the Oracle VM Guest Additions in general, see Chapter 3, *Using the Oracle VM Guest Additions*.

### 2.5.1. Command Line Options and Parameters of ovm_vmmmessage

The ovm_vmmmessage utility has the following command line options:

- **-u** user name of an Oracle VM Manager admin user (required)
- **-p** password corresponding with the admin user name (required)
- **-h** host name of the server running Oracle VM Manager (required)
- **-x** use SSL to connect to Oracle VM Manager
Examples of ovm_vmmessage Usage

- **v** virtual machine name
- **-U** virtual machine UUID
- **-k** key to send
- **-V** value to send along with the key (required when using **-k**)
- **-q** key to query

Note that **ovm_vmmessage** only works on a running virtual machine. To send messages you combine **-k** `<key>` and **-V** `<value>`. To retrieve messages, use **-q** `<key>`.

**Caution**

The virtual machine name is the name you assign during the creation of the VM. However, the same name could be assigned to several different VMs. If that is the case, you must use the `-U` option and provide the unique identifier (UUID) of the VM.

### 2.5.2. Examples of ovm_vmmessage Usage

Below are examples of **ovm_vmmessage** commands and their respective output.

- **Send a message key/value pair to a virtual machine:**
  ```
  # ./ovm_vmmessage -u admin -p password -h localhost -v MyVM02 -k foo -V bar
  Oracle VM VM Message utility 0.5.2.
  Connected.
  VM : 'MyVM02' has status : Running.
  Sending message.
  Message sent successfully.
  ```

- **Send a message key/value pair to a virtual machine, identifying the VM by its UUID:**
  ```
  # ./ovm_vmmessage -u admin -p password -h localhost -U 0004fb00000600001c925eac2ad5d328 -k foo -V bar
  Oracle VM VM Message utility 0.5.2.
  Connected.
  VM : 'MyVM02' has status : Running.
  Sending message.
  Message sent successfully.
  ```

- **Retrieve a message from a virtual machine, identifying the VM by its UUID:**
  ```
  # ./ovm_vmmessage -u admin -p password -h localhost -U 0004fb00000600001c925eac2ad5d328 -q foo
  Oracle VM VM Message utility 0.5.2.
  Connected.
  VM : 'MyVM02' has status : Running.
  Querying for key 'foo'.
  Query successful.
  Query for Key : 'foo' returned value 'bar'.
  Key set 27 minutes ago.
  ```

### 2.6. Using Oracle VM Pool Control

The **ovm_poolcontrol** utility allows the administrator to quickly retrieve information about the status of a given server pool under the control of this Oracle VM Manager, and view and acknowledge events registered for both the server pool and its Oracle VM Server members.
2.6.1. Command Line Options and Parameters of ovm_poolcontrol

The *ovm_poolcontrol* utility has the following command line options:

- **-u** user name of an Oracle VM Manager admin user (required)
- **-p** password corresponding with the admin user name (required)
- **-h** host name of the server running Oracle VM Manager (required)
- **-X** use SSL to connect to Oracle VM Manager
- **-s** server pool name
- **-l** server pool UUID (which is a series of 16 hexadecimal numbers separated by colons)
- **-S** Oracle VM Server name (use together with -c addserver/removeserver)
- **-A** acknowledge events (use together with -c events)  
  
  [all, pool]: acknowledge events for both server pool and servers, or for the server pool only
- **-c** console command (required)

**Note**  
With the *addserver* and *removeserver* commands, only a very basic add/remove of the server is performed; no assigning or unassigning of networks and repositories occurs.

2.6.2. Examples of ovm_poolcontrol Usage

Below are examples of *ovm_poolcontrol* commands and their respective output.

- **List all server pools and their status:**

  ```
  # ./ovm_poolcontrol -u admin -p password -h localhost -c list
  Oracle VM Pool Control utility 0.5.2.
  Connected.
  Command : list
  Repository : 'MyServerPool1'
  ID : '0004fb0000020000d2ee5d9394b371c5'
  Status : 'Online'
  Repository : 'MyServerPool2'
  ID : '0004fb0000020000183c51866b2fa4a1'
  Status : 'Online'
  Exit...
  ```

- **Display detailed information of a server pool:**

  ```
  # ./ovm_poolcontrol -u admin -p password -h localhost -s MyServerPool1 -c info
  Oracle VM Pool Control utility 0.5.2.
  Connected.
  Command : info
  Server Pool : MyServerPool1
  Status : 'Online'
  ID : '0004fb0000020000d2ee5d9394b371c5'
  Virtual IP : 10.172.77.172
  ```
2.7. Using Oracle VM Repository Control

The `ovm_repocontrol` utility allows the administrator to quickly retrieve information about status and contents of a given storage repository, and send a refresh command to update the storage repository contents listed.

2.7.1. Command Line Options and Parameters of `ovm_repocontrol`

The `ovm_repocontrol` utility has the following command line options:

- `-u` user name of an Oracle VM Manager admin user (required)
- `-p` password corresponding with the admin user name (required)
- `-h` host name of the server running Oracle VM Manager (required)
- `-X` use SSL to connect to Oracle VM Manager
- `-r` storage repository name
- `-I` storage repository UUID
- `-s` name of an Oracle VM Server with access to the storage under the repository (use together with `-c` create)
- `-i` UUID of a LUN where a storage repository should be created (use together with `-c` create)
- `-c` console command (required)

(commands: `list`, `status`, `info`, `refresh`, `fixrepo`, `create`)

Note: The `refresh` command initiates a storage repository refresh operation through Oracle VM Manager.
The `list` command does not need a storage repository name or UUID argument. It lists every storage repository registered with the system.

The `fixrepo` command removes partial configuration information in case the creation of a storage repository on a physical disk has failed. This allows you to redo the creation operation for the storage repository.

2.7.2. Examples of ovm_repocontrol Usage

Below are examples of `ovm_servercontrol` commands and their respective output.

- List all registered storage repositories:

```
# ./ovm_repocontrol -u admin -p password -h localhost -c list
Oracle VM Repository Control utility 0.5.2.
Connected.
Command : list
Repository : 'MyIscsiRepo1'
  ID     : '0004fb0000030000b0272c74e714ab12'
  Status : 'Online'
Repository : 'MyIscsiRepo2'
  ID     : '0004fb0000030000a1d2474a7325ab25'
  Status : 'Online'
Repository : 'MyNfsRepo'
  ID     : '0004fb0000030000a3ff6bbfe68511a6'
  Status : 'Online'
Exit...
```

- Create a new storage repository on a LUN:

```
# ./ovm_repocontrol -u admin -p password -h localhost -c create -r MyIscsiRepo3 -s MyServer4
Oracle VM Repository Control utility 0.5.2.
Connected.
Command : create
Found LUN with id '3600144f057ef8a0000004fb3194b0001'
Creating filesystem...
Creating repository... Please wait...
Create repository completed.
Exit...
```

- Check the status of a storage repository:

```
# ./ovm_repocontrol -u admin -p password -h localhost -r MyIscsiRepo2 -c status
Oracle VM Repository Control utility 0.5.2.
Connected.
Command : status
Repository : 'MyIscsiRepo2'
  Status  : 'Online'
Exit...
```

- Display detailed information of a storage repository:

```
# ./ovm_repocontrol -u admin -p password -h localhost -r MyIscsiRepo1 -c info
Oracle VM Repository Control utility 0.5.2.
Connected.
Command : info
Repository : 'MyIscsiRepo1'
  Total Space       : 7500000 MB
  Available Space   : 4146146 MB
```
Examples of ovm_repocontrol Usage

```
Assigned Servers :
    Server : MyServer6
    Server : MyServer7
Assemblies :
Virtual CDroms :
    CDrom : ubuntu-11.10-desktop-i386.iso
        uuid : 0004fb0000150000d8de2efc475b4ea5.iso
            VM list : (MyUbuntu1110)
    CDrom : EnterpriseLinux-R6U1-Server-x86_64.iso
        uuid : 0004fb0000150000da320985ba0c2f9b.iso
            VM list : (MyOL6)
Virtual Disks :
    Virtual Disk : MyOL6_bootdisk
        uuid : 0004fb000012000086bf184d2996f0cf.img
            VM list : (MyOL6)
    Virtual Disk : MyOL6_datadisk
        uuid : 0004fb00001200007d18ce0a22e16658.img
            VM list : (MyOL6)
    Virtual Disk : MySolaris11_bootdisk
        uuid : 0004fb00001200008a27187d18c66e0a.img
            VM list : (MySolaris11)
    Virtual Disk : MyUbuntu1110_bootdisk
        uuid : 0004fb000012000096f0ce0a27d18c66f.img
            VM list : (MyUbuntu1110)
Virtual Machine Configs :
    Config : 0004fb0000220000b1fc2e486c1c1b7a
            VM : (MySolaris11)
    Config : 0004fb0000220000b68857e7746eafc
            VM : (MyOL6)
    Config : 0004fb0000220000eb037b82dee6b10b
            VM : (MyUbuntu1110)
Exit...
```

- Refresh the contents of a storage repository:

```shell
./ovm_repocontrol -u admin -p password -h localhost -r MyIscsiRepo1 -c refresh
Oracle VM Repository Control utility 0.5.2.
Connected.
Command : refresh
refreshing 3300000006160a212
Lun Refresh completed...
Exit...
```
Chapter 3. Using the Oracle VM Guest Additions

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This chapter gives you more detail on the installation, configuration and features of the Oracle VM Guest Additions.

3.1. Installing Oracle VM Guest Additions

For the Oracle VM templates without Guest Additions installed, the following software packages can be downloaded from Oracle Unbreakable Linux Network (ULN) by choosing the proper channel to download and install into the existing Oracle Linux 5 or 6 guest with Oracle Unbreakable Enterprise Kernel (UEK).

<table>
<thead>
<tr>
<th>Package</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kmod-ovmapi-uek</td>
<td>for loading and unloading guest modules</td>
</tr>
<tr>
<td>libovmapi</td>
<td>provides host-to-guest communication</td>
</tr>
<tr>
<td>libovmapi-devel</td>
<td>development files for libovmapi</td>
</tr>
<tr>
<td>ovmd</td>
<td>manages guest managed devices like the network interface and the CD-ROM</td>
</tr>
<tr>
<td>python-simplejson</td>
<td>provides JSON support</td>
</tr>
<tr>
<td>xenstoreprovider</td>
<td>for interacting with the Xenstore storage system</td>
</tr>
<tr>
<td>ovm-template-config</td>
<td>configuration files for various guest configurations</td>
</tr>
<tr>
<td>ovm-template-config-authentication</td>
<td>configuration files for guest authentication features</td>
</tr>
<tr>
<td>ovm-template-config-datetime</td>
<td>configuration files for guest datetime settings</td>
</tr>
<tr>
<td>ovm-template-config-firewall</td>
<td>configuration files for guest firewall settings</td>
</tr>
<tr>
<td>ovm-template-config-network</td>
<td>configuration files for guest network settings</td>
</tr>
<tr>
<td>ovm-template-config-selinux</td>
<td>configuration files for guest SELinux settings</td>
</tr>
<tr>
<td>ovm-template-config-ssh</td>
<td>configuration files for guest SSH settings</td>
</tr>
<tr>
<td>ovm-template-config-system</td>
<td>configuration files for guest system-wide settings</td>
</tr>
<tr>
<td>ovm-template-config-user</td>
<td>configuration files for guest user settings</td>
</tr>
</tbody>
</table>

These packages can be downloaded from the following ULN channels:

- Oracle Linux 6 Add ons (x86_64)
- Oracle Linux 6 Add ons (i386)
- Enterprise Linux 5 Add ons (x86_64)
- Enterprise Linux 5 Add ons (i386)

In addition, the packages are available from Oracle's Public YUM repository.

To install these packages, make sure that your virtual machine has public internet access and is connected to the appropriate ULN channel or YUM repository. Then use the following command syntax in your Oracle Linux guest, separating the package names by spaces:

```
# yum install libovmapi xenstoreprovider ovmd python-simplejson xenstoreprovider
```

**Caution**

When manually installing the downloaded packages, make sure that the `kmod-ovmapi-uek` version matches the UEK version of the virtual machine:
3.2. Upgrading the Oracle VM Guest Additions

For the Oracle VM templates that already have Guest Additions installed, you may need to ensure that certain packages are updated in order for Guest Additions to function correctly. Using the Oracle Unbreakable Linux Network (ULN) Yum repository you can run the following command to update the Guest Additions packages:

```
# yum update ovmd libovmapi xenstoreprovider \
   ovm-template-config \ 
   ovm-template-config-authentication \ 
   ovm-template-config-datetime \ 
   ovm-template-config-firewall \ 
   ovm-template-config-network \ 
   ovm-template-config-selinux \ 
   ovm-template-config-ssh \ 
   ovm-template-config-system \ 
   ovm-template-config-user
```

If you are using a kernel version lower than UEK 2.6.39-300, and you want to continue to use the current kernel, you must also run the following command to update the ovapi.ko module:

```
# yum update kmod-ovmapi-uek
```

Alternatively, you can update your kernel to the latest UEK version by running the following command:

```
# yum update kernel-uek
```

---

### Note

If you are using Oracle Linux 5, you need to enable ol5_UEK_latest within `/etc/yum.repos.d/ULN-Base.repo`, before you attempt to update your kernel version. For example, the file should contain the following lines:

```
[o15_UEK_latest]
name=Latest Unbreakable Enterprise Kernel for Oracle Linux $releasever ($basearch)
gpgkey=http://public-yum.oracle.com/RPM-GPG-KEY-oracle-el5
gpgcheck=1
enabled=1
```

3.3. Features of the Oracle VM Guest Additions

Together with the ovm_vmmessage utility on the Oracle VM Manager, the Oracle VM Guest Additions form a bi-directional messaging channel between Oracle VM Manager and the guest. More specifically, as part of the Oracle VM Guest Additions, a command line tool called ovmd is installed. It allows first-boot installation configuration, and is capable of sending and receiving messages consisting of key-value pairs just like the ovm_vmmessage utility. As you can see in the help, ovmd has the following command line options:

```
# ovmd --help
usage: ovmd [options]

options:
```
3.3.1. Using the Messaging Channel

This section provides an example of a message exchange between Oracle VM Manager and a running Oracle Linux virtual machine with Oracle VM Guest Additions installed. More information about the messaging utility can be found in Section 2.5, “Using Oracle VM Virtual Machine Messaging”.

Sending a message from the guest to Oracle VM Manager.

Using ovmd, you send information to your Oracle VM Manager using the following syntax:

```
# ovmd -p key1=value1
```

The message shows up in the Oracle VM Manager user interface, as a Virtual Machine API Incoming Message event for the virtual machine in question. When you expand the event, the description shows the key-value pair and the date and time when the information exchange took place.

The message from the guest can also be retrieved via the Oracle VM Manager command line utility ovm_vmmessage. To do so, you query the key and the value is returned in the response:

```
# ./ovm_vmmessage -u admin -p password -h localhost -v MyVM02 -q key1
```

Sending a message from Oracle VM Manager to a virtual machine.

Using ovm_vmmessage, you send information to a virtual machine using the following syntax:

```
# ./ovm_vmmessage -u admin -p password -h localhost -v MyVM02 -k key2 -V value2
```

Using ovmd from within the guest, you can retrieve the message sent from Oracle VM Manager using the following syntax:

```
# ovmd --list
{"key1":"value1"}
{"key2":"value2"}
```

The ovmd --list command retrieves all messages, both sent and received. You can identify the specific message you are looking for by its key. To remove obsolete messages, use the following syntax:
3.3.2. Displaying the Guest IP Address

When the Oracle VM Guest Additions are installed, the virtual machine IP address becomes visible in the Oracle VM Manager user interface, as part of the detailed virtual machine information.