

Oracle VM Manager Template

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Using the Oracle VM Manager Template to manage Oracle VM servers.

Oracle VM is Oracle's own x86/x86-64 server virtualization product, launched fall 2007. Oracle VM provides a very stable and high performance solution to run Oracle products in a production environment inside virtual machines (VM). The product has been well tested and is fully supported and certified to be used with confidence. It is also a general purpose virtualization solution, not just for Oracle products. We fully support 3rd party products and applications but we want to ensure there is a supportable solution out there for our Oracle product customers.

Oracle VM consists of 2 components. Oracle VM Server is the software installed on each physical server on which you want to deploy virtual machines and Oracle VM Manager is a web-based centralized management console which usually gets installed on a separate physical server. Oracle VM servers can be configured to be part of a pool, connected through shared storage, offering features like online secure live migration and HA capabilities, such as restarting virtual machines that died unexpectedly. If a physical server in a pool fails and virtual machines automatically get restarted on a different server within a given pool. There is support for gold images or virtual machine templates which can be used as a basis to create new virtual machines and many other features. Oracle VM Manager is designed to handle many server pools and many more virtual machines per pool.

Oracle VM Manager is not a required product, if one wants to just deploy separate Oracle VM servers and manually manage the virtual machines using a command line interface this is fully supported. Most customer however actually use Oracle VM Manager as it provides that easy to use web-based interface.

A default setup consists of at least 2 servers, one server running Enterprise Linux with the Oracle VM Manager product installed. This can be a relatively small server, minimum 1.5GB to 2GB of RAM, 1 or 2 cpu cores and at least 10 - 20GB of free disk space. The other server(s) running the Oracle VM server software.

Why run the management console inside a virtual machine ?

Both Oracle VM manager and Oracle VM server are available for download for free from the edelivery website.

For many users, virtualization is still relatively new and they want to learn how the products work without the need for a full infrastructure. Sometimes it's the case that there is not enough hardware available to configure multiple servers or there is an general interest in installing the management product on the same server as the server virtualization product to make use of some of the HA features. To address this request we have recently released an Oracle VM Manager template on <http://edelivery.oracle.com/oraclevm>. This template is a fully pre-installed, pre-configured virtual machine. It can be downloaded onto an installed Oracle VM server and quickly set up. It allows users to get going with Oracle VM on just a single box, or you can use the virtual machine to manage pools of servers as you otherwise would be able to do, with a few caveats which will be explained later in this paper.

This configuration is a fully supported environment for Oracle VM, as long as the restrictions are understood.

Oracle VM has High Availability features built into the product.

There are also some advantages of running inside a virtual machine. If set up using the HA feature of Oracle VM, then if the guest VM dies or a physical server dies, the manager VM will also automatically get restarted on a different server. The auto-restart feature happens directly on the server. Every server runs an agent which monitors the VMs running and the master agent in a pool decides to restart a failed VM elsewhere (if you have tagged that particular VM to be in autorestart mode). So you get failover for free without the need for a special setup. It also means you can securely live migrate the VM running Oracle VM Manager to a different machine if the physical server requires maintenance, without having to deal with down-time of the manager application.

One other advantage of the template is that the OS is already installed, the management software is already installed so it literally is a just an exercise of downloading the image and starting it up. Most virtualization product vendors do not have an Operating System that can freely ship without an additional license fee or contract. Given Oracle Enterprise Linux and it being freely available for distribution and download, we can bundle the entire image up. It is then possible to just purchase a support subscription to receive support for the products. Many other vendors will have to distribute a non-enterprise quality OS or require you to install a virtual machine from scratch, including the operating system in order to run the management console.

We do offer a very convenient way to set up Oracle VM Manager in a physical server along with failover capabilities. Please see the Oracle VM Manager HA white paper on the Oracle website. This is based on using Oracle Clusterware to protect the application, database and operating system and provide protection and restart features. <http://www.oracle.com/technologies/virtualization/docs/ovm-clusterware-whitepaper.pdf>

How to set up oraclevm manager inside a virtual machine using the oraclevm manager template

Architectural overview of the template

The virtual machine comes as a set of files under a directory called `OVM_EL5U2_X86_OVM_MANAGER_PVM`. it contains 3 files.

- `vm.cfg` -> small textfile describing the VM
- `System.img` -> first virtual disk image containing the OS image
- `Manager.img` -> second virtual disk image containing the Oracle VM Manager software, OC4J with its embedded JVM and an Oracle XE database

The default `vm.cfg` describes a virtual machine with the following parameters :

- RAM : 2GB
- Virtual CPUS : 2
- Virtual Network interfaces : 1
- Virtual Machine name : `OVM_EL5U2_X86_OVM_MANAGER_PVM`

OEL4 JEOS and OEL5 JEOS are Oracle Enterprise Linux Editions to build the smallest possible Linux OS installations tuned for your own product needs.

The VM is also configured with a paravirtualized Linux kernel for optimal performance and the OS image is based on the OEL5 JEOS template which allows for a very small OS installation image of OEL5.

The Oracle Stack consists of a number of components : OC4J is the J2EE container and gets started at bootup of the VM. Oracle XE is the default database installed and also gets started at bootup. The Oracle VM manager application will automatically be loaded into the container and configured with your admin username and password at first boot.

2 default users are created with default passwords which you are advised to modify upon first boot.

User 'root' with password 'ovsroot'

User 'oracle' with password 'oracle'

Highlevel Installation steps

The template comes as a zipfile, which you have to download from <http://edelivery.oracle.com/oraclevm>. Once you provide a name and email address, you can click on Oracle VM Templates product pack, x86-32bit architecture and find the Oracle VM Manager template for download.

After downloading the zip file, you can simple unzip this with your standard unzip command. The zipfile simply contains a compress tar file : `OVM_EL5U2_X86_OVM_MANAGER_PVM.tgz`.

Detailed installation steps can be found in the README on the download website.

Once the template is un-tarred on the system and started locally with the `xm create` command, you have to use a vnc client such as `tightvnc` or `vncviewer` on any OS to connect to the console port of the VM. If this is the only VM running on the server this would be `<serverhostname>:5900` or `<serverhostname>` and display 0 if you do not have to provide a port number in the vnc client.

The first time you start the VM, you will be asked a number of questions, per the README. Questions such as which static IP address to use for the VM, passwords for the Oracle database accounts and the OC4j account and the initial admin account for Oracle VM manager. Once these questions are answered, the system gets configured and from then on you can simple use your favorite browser on your desktop and connect to the manager application using `http://<hostname>:8888/OVS`.

This template is also configured to create an initial server pool and register itself. The first boot scripts will ask a server pool name and the agent password of the Oracle VM server you installed the template on. Please see the Oracle VM server documentation for server installation instructions and how to configure High Availability setups. If you have created a pool of servers in HA mode, the manager will also automatically enable the HA option.

Oracle VM Templates allow for Rapid
Deployment

As you can see, with just a few installations steps, it is possible to rapidly and easily set up Oracle VM manager in a VM.

Limitations and restrictions

There are a number of restrictions with regards to running the Oracle VM Manager component inside a virtual machine. In particular the VM has to always remain up and running. This means that a number of tasks, such as pause, unpause, suspend, resume, poweroff and save as template will not work against this VM. If you attempt any of these tasks, the virtual machine, including the management interface, will become unavailable. If this were to happen, it will always be possible to manually log on to the Oracle VM server and use the standard `xm` commands to restart the virtual machine.

When you have enable the HA option, if a server fails or the virtual machine were to disappear, the agent running on the Oracle VM server will automatically restart the VM and after a few seconds, the management interface will re-appear. When HA is not enabled for this particular VM or on the server pool, then it is up to the administrator to restart the virtual machine manually by logging into the server.

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