

# Oracle VM - Quantifying The Value of Application-Driven Virtualization

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**Evaluator Group**

*Enabling you to make the best technology decisions*

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## Executive Summary

Server virtualization has proven to be a very powerful and cost effective technology for IT datacenters today and its adoption rate is rapidly on the increase. One of the largest benefits from server virtualization is server consolidation and that means enterprise applications are also getting consolidated. The rapid deployment of virtualized infrastructures has been maturing recently but the rapid deployment of enterprise applications has not matured as quickly. Oracle has been working to include rapid deployment for Oracle enterprise applications as part of their virtualized rapid deployment solution.

Oracle VM server virtualization is part of the virtualization offering from Oracle and designed for operational efficiencies going beyond simple server consolidation. Oracle VM's application-driven architecture is built to enable rapid deployment of enterprise applications and simplified integrated lifecycle management to fully support physical, virtual and applications. Oracle VM Templates are an important component to enabling rapid enterprise application deployment. An Oracle VM Template consists of a virtual machine (VM), or group of VMs, containing Oracle or other software that is pre-built, pre-installed, pre-configured and ready to use—no installation required. This reduces installation and configuration time and cost, which can minimize ongoing maintenance costs. In turn, this will help organizations achieve faster deployment time and lower cost of operations. The Templates are designed to ensure reliable and repeatable use – the user gets exactly the same application code every time instead of repeating a set of installation steps that increase the risk of making mistakes. In deploying virtualized applications with templates, the user always starts from the exact same known state. Oracle VM Templates are available including Oracle Linux, Oracle Solaris, Oracle Database, Fusion Middleware, and many more; see the complete list at [www.oracle.com](http://www.oracle.com).

Deploying Oracle VM with Oracle Real Application Cluster (RAC) and E-Business Suite templates was much faster to deploy than a VMware vSphere 5 virtualized environment installing the same applications with a traditional rapid installer on a 2-node cluster. Each template prompts for configuration information (i.e. node names, IP addresses, and other configuration information...) and the template does the rest in less than a half day. The Oracle RAC template automatically provides a 2-node cluster with the ability to add additional nodes. E-Business Suite was just as easy to install with filling out a few questions for the application database and application server it too installed in less than 3 hours.

Evaluator Group assessed Oracle VM software 3.1.1 with Oracle RAC 11g Release 2 and E-Business Suite 12.1.1 in June 2012. There were two deployment scenarios, Oracle VM and VMware vSphere 5 2-node cluster environments. This report outlines the validation process and overview each environment, present the challenges, summarize the time it took to install all three environments, and findings.

It should be noted that Oracle VM Templates are different from how VMware offers templates. Oracle VM templates are pre-built, pre-configured, pre-tested and ready for deployment once downloaded. VMware templates require the end user to manually install the application on a guest OS and then

through scripts, tools and cloning generates his/her own VMware template. Then that clone can be customized for new virtual machines.

## Enterprise Application Installation Challenges

Evaluator Group speaks with IT users from companies of all sizes across the world. Although new architectures, capabilities and applications present ongoing challenges for IT staff, the fact remains that a large portion of time and resources remain dedicated to installs of enterprise applications including other Oracle applications. With the recent widespread adoption of server virtualization, install challenges and time consumed are still present as they are for a physical environment.

Installing Oracle software is similar to installing other large enterprise UNIX software applications. We ran into some of the common challenges that most administrators run across at one time or another. Some of the time consuming challenges we ran into with the traditional install are:

- Slow and error-prone deployment during the install of many components separately with dependences on patches OS versions and other packages can make traditional deployment time consuming and difficult to manage.
- The install documentation is not always current with the matching version of software. Critical steps sometimes missed.
- Unzipping files. There are so many files to unzip it is easy to miss unzipping a few files
- Configuration mistakes (network, storage, etc...)
- Java popups can get hidden behind other windows
- Permissions problems with application installer scripts. We ran into this with the Oracle RAC Universal Installer root.sh scripts. This caused us to start the install over.

Part of the value of the Oracle VM Templates is the elimination of the time spent on these common challenges. The OS and OS patches are pre-installed and pre-configured by product experts and developers. This offers a high degree of repeatability every time these applications are installed.

## Overview of Evaluation

Oracle commissioned Evaluator Group to validate their claims of the rapid deployment of Oracle applications using VM templates and compare with the deployment of the same Oracle applications in a VMware vSphere 5 installation. The following two scenarios were tested on a two-node cluster with iSCSI storage (additional details in Appendix A). Additional hardware and software details are in Appendix B.

### Oracle VM 3.1.1

Software - Oracle Linux 5.7, Weblogic, Oracle RAC 11g R2 template, E-Business Suite template 12.1.1

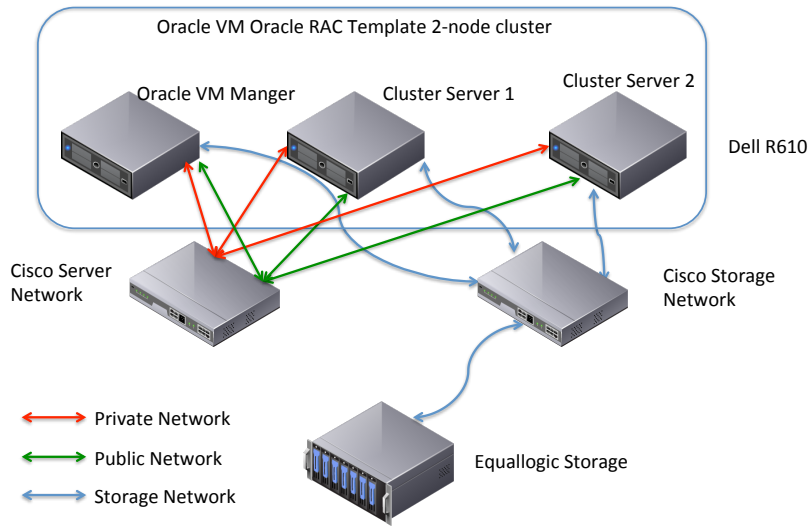


Figure 1 – 2-node Oracle VM cluster with management console and iSCSI storage

## VMware vSphere 5

Software - Oracle Linux 5.7, Weblogic, Oracle RAC 11g R2, E-Business Suite 12.1.1

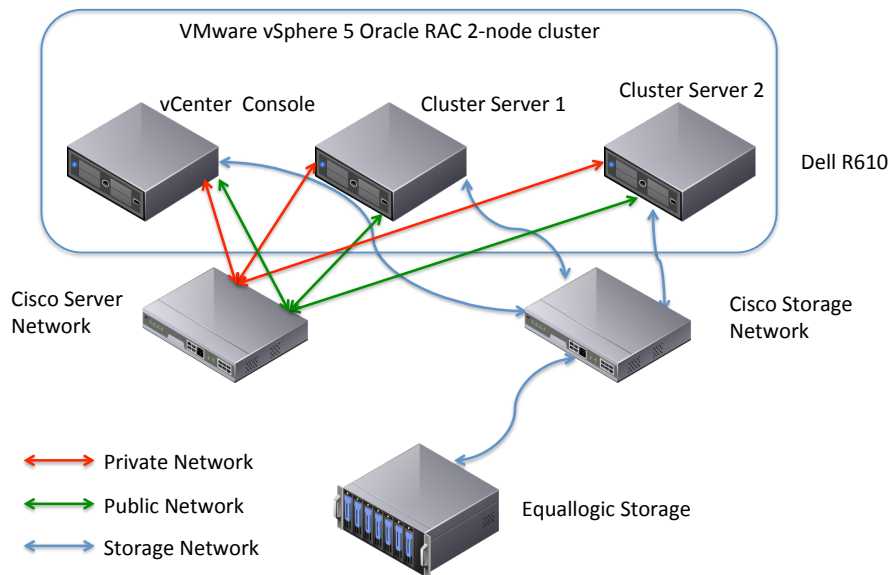


Figure 2 – 2-node VMware cluster with management console and iSCSI storage

## Validation Objectives

The validation primarily focused on Oracle’s ease of use claims with the new Oracle VM templates for Oracle RAC and E-Business Suite. The goal is to validate the Oracle’s claim of rapid deployment with Oracle VM templates.

Installation times were measured only. No performance measurements of the products were made. The test environment was designed to emulate typical IT environments, utilizing a 2-node cluster in each scenario with a management console and iSCSI storage. For the VMware vSphere 5, deployment rapid installers for Oracle RAC 11g Release 2 and E-Business Suite 12.1.1 were used.

The validation objectives were to:

1. Measure the time it takes for each Installs/configure, for each of the two scenarios, to complete.
2. Disclose any additional tools needed to configure the applications.
3. Distinguish between the time taken by the database administrator vs. the systems administrator

## Evaluation Findings

The Evaluator Group found that deploying Oracle RAC 11g Release 2 and Oracle E-Business Suite 12.1.1 using the Oracle VM Templates on Oracle VM 3.1.1 was magnitudes faster than traditional install performed on a VMware vSphere 5 deployment.

Environment	Oracle RAC 11g	E-Business Suite 12.1.1
Oracle VM 3.1.1 w/ templates (hours)	3 hrs 55 min	2 hrs 15 min
VMware vSphere 5 (hours)	39 hrs 45 min*	15 hrs 15 min

\* The average experienced DBA would take 2-5 days.

**Table 1 – Install Times**

To deploy both the Oracle VM and VMware vSphere 5 2-node clusters took approximately the same amount of time. Deployment time may vary based on documentation, storage, and networking needs. To prepare the template deployment importing, unpacking, and customizing took about 30 minutes per template by the Oracle DBA. Total deployment of the templates took 6 hours 10 minutes.

The VMware vSphere 5 install took over a week to for the Oracle DBA to install all the supporting packages and the application software.

## DBA Overall Application Install Time

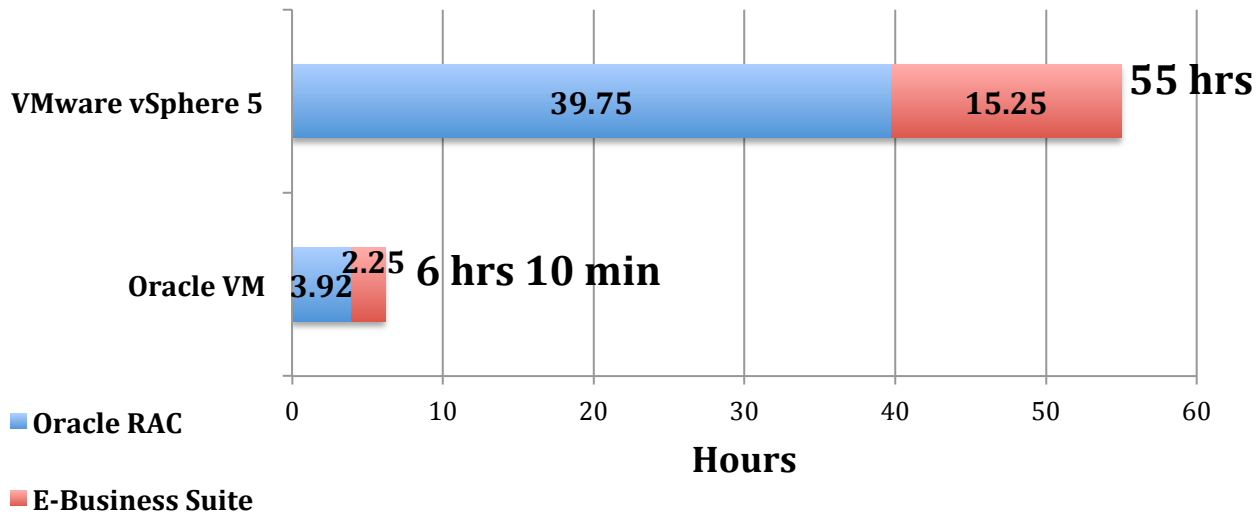


Figure 5 – Oracle DBA Overall Install Times for both Installations

The Oracle VM Oracle RAC Cluster template took a total of 3 hours and 55 minutes to prepare and deploy:

- Create Oracle VM RAC Guests – 1 hour
- Customize Oracle VM RAC Guests – 15 minutes
- Initialize and Configure the RAC Cluster – 1 hour 30 minutes
- Oracle RAC Cluster build – 40 minutes
- Validating the Oracle RAC Cluster – 30 minutes

We believe the time it took to deploy the template could be shorter if the documentation was current with the actual install.

The Oracle VM E-Business Suite template took a total of 2 hours and 15 minutes to prepare and deploy:

- Create Oracle VM Guests – 1 hour
- Customize Oracle VM Guests – 15 minutes
- Initialize and Configure the E-Business Suite and the application server template – 30 minutes
- Deploy E-Business Suite and application server – 30 minutes

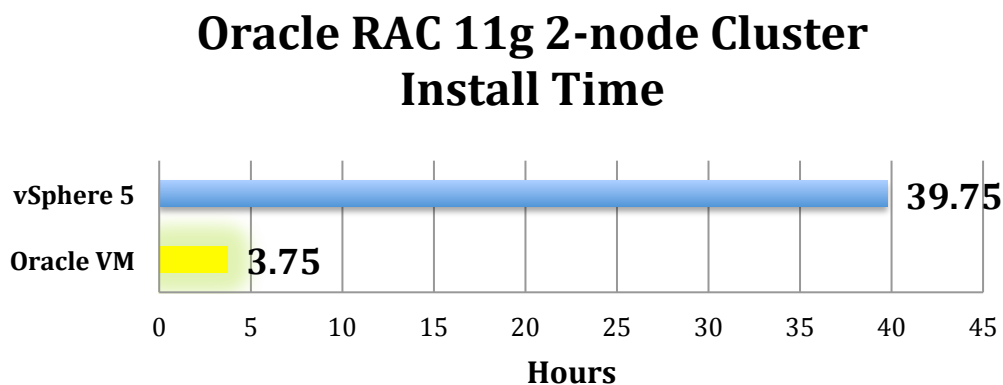
The advantage of using the Oracle VM templates was evident, especially with the Oracle RAC 11g R2 template (3 hours 55 minutes compared to 40 hours).

## Evaluation Summary

Evaluator Group found that the Oracle VM templates were very valuable for rapid deployment of Oracle RAC and E-Business Suite. The time it took just to download the individual software components alone saves the average IT professional from days to less than half a day. The templates include everything needed to deploy the targeted application including any patches and supporting software needed for the deployment. We did run into a challenge due to the documentation to deploy the clusters was not current with installation needs. Omissions of critical steps added time to our deployment. Despite these pitfalls once they were resolved the time savings was still great. If we had done the deployment without the Oracle VM Templates the Oracle VM deployment would have take the same time as the vSphere deployment. We did find after our study Oracle has released a new tool called Deploycluster that claims to build a 4-node cluster in 40 minutes using this new tool.

### Oracle RAC 11g R2 on vSphere 5 vs. Oracle RAC 11g on Oracle VM Template

The download and unzip of Oracle RAC 11g R2 took about 16 hours vs. the Oracle VM template for Oracle RAC took less than 2 hours. The difference in time reflects the time it took to download Oracle RAC software vs. the template was not only Oracle RAC software but also the additional supporting software to create the Oracle RAC 2-node cluster. The Oracle VM Oracle template for Oracle RAC has all software needed bundled in one downloadable file. Even with a rapid installer the traditional Oracle RAC 11g R2 install process can take anywhere from 2 days to several weeks depending if you are an expert in installing Oracle RAC or if this is your first time and don't know what to expect. We performed a guided install with support from an Oracle ACE and it took 5 days. With the Oracle VM Oracle RAC 11g R2 template, it does not matter if this is an administrator's first time or if he/she is an expert. It takes approximately the same about of time, just under 4 hours, to install the Oracle RAC 11g R2 application. One nice thing about the install is that it installs a complete 2-node environment with all of the needed packages, such as, an Oracle 11g database, Oracle 11g Clusterware, Oracle 11g R2 Automated Storage Management.

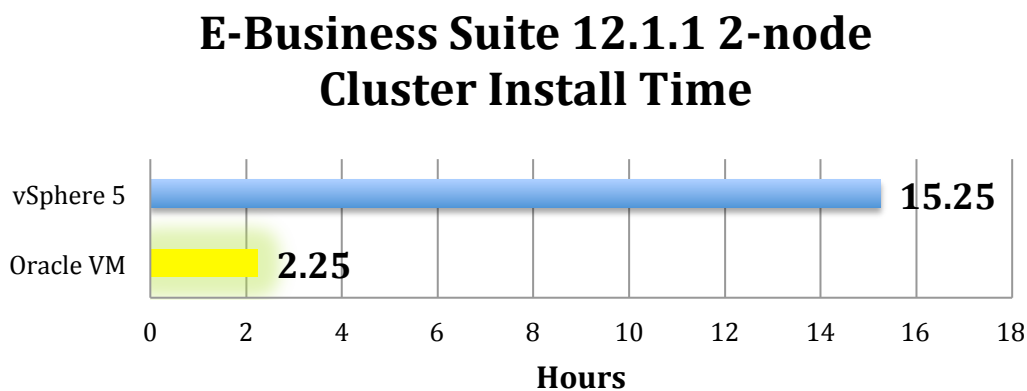


**Figure 6** – Oracle VM Template vs. Traditional Install of Oracle RAC 11g R2 on vSphere 5



### E-Business Suite 12.1.1 Install on vSphere vs. E-Business Suite 12.1.1 Install on Oracle VM using Oracle VM template

The download and unzip of the E-Business Suite also took about 16 hours vs. the Oracle VM E-Business Suite template which took a little more than 2 hours. The difference in time reflects the time it took to download E-Business Suite software vs. the template was the many files that needed to be downloaded and unzipped. The Oracle VM E-Business Suite template has all software needed bundled in one downloadable file. The installation was just answering a few questions about the database and application server resources and the total deployment of the E-Business Suite template took in less than 3 hours.



**Figure 7** – Oracle VM Template vs. Traditional Install of E-Business Suite 12.1.1 on vSphere 5

## Installation References and Guides

Oracle VM template website - <http://www.oracle.com/technetwork/server-storage/vm/templates-101937.html>

Oracle® VM Utilities Guide for Release 3 -  
[http://docs.oracle.com/cd/E27300\\_01/E27604/html/index.html](http://docs.oracle.com/cd/E27300_01/E27604/html/index.html)

OVM 3 Quick Start Guide –

- <http://www.oracle.com/technetwork/server-storage/vm/ovm3-quick-start-guide-wp-516656.pdf>
- <http://www.oracle.com/us/technologies/virtualization/oraclevm/index.html>
- <http://www.oracle.com/technetwork/server-storage/vm/overview/index.html>
- <http://www.oracle.com/technetwork/server-storage/vm/downloads/index.html>

## Appendix A - Test Scenarios

See Appendix B for test configuration details.

### Preparation

1. Build 2 server cluster with iSCSI storage and a server console
2. Prepare network & hostname/IPs
3. Download the following Oracle VM SW:
  - a. Oracle VM Server product
  - b. Oracle VM Manager product
  - c. Oracle VM template for Oracle Linux OEL 5.7 64-bit standalone server
  - d. Oracle VM template for Oracle RAC R2 (11.2.0.3)
  - e. Oracle VM template for E-Business Suite 12.1.1
4. Make all templates available on internal http or anonymous ftp site
5. Download the following Oracle software:
  - a. Oracle Linux OEL 5.7 64-bit standalone server
  - b. Weblogic
6. Download VMWare vSphere 5 server

### Oracle VM w/ templates

Major Install Steps

1. The Oracle VM Manager
  - a. Install Oracle VM Server on 2 x86 servers
  - b. Install Oracle Linux OEL 5.7 64-bit standalone server on a 3<sup>rd</sup> server
  - c. Install Oracle VM Manager application on that 3rd server
  - d. Create the server pool
  - e. Configure shared storage and networks on VM servers
2. Oracle RAC 11g R2 (11.2.0.3)
  - a. Create VM using templates
  - b. Pre-deployment Preparation (Network, Storage, Oracle VM Manager)
  - c. Import the Oracle VM Template for RAC
  - d. Customize the Oracle VM Template for RAC
  - e. Deploy RAC Cluster (Create and customize guests, initialize the RAC cluster, validate the guests)
3. E-Business Suite 12.2
  - a. Import the Oracle E-Business Suite Template for the DB Tier into VM repository
  - b. Import the Oracle E-Business Suite Template for the Apps Tier into VM repository
  - c. Create a Virtual Machine for the DB
  - d. Create a Virtual Machine for the Apps Tier.
  - e. Boot up the DB VM first. It will prompt you for the network setup and the SID for the DB

- f. Boot up the Apps VM next. It will prompt you for the network setup and the SID and the DB hostname.

## VMware vSphere 5

1. vSphere 5.0 hypervisor and create a virtual machine
  - a. Use the installer for ESXi
  - b. Configure ESXi boot and network settings, direct console, etc...
  - c. Install the vSphere Client to manage the ESXi host
  - d. Install vCenter
2. Latest version of Oracle Linux – OL 5.7 64-bit standalone server
  - a. Install required Linux packages for Oracle RAC
  - b. Network Configuration
  - c. Cluster time Synchronization Service
  - d. Install Openfiler (for production it is recommended to use NFS, SCSI, or FC storage)
  - e. Configure iSCSI Volumes using Openfiler
  - f. Configure iSCSI volumes on Oracle RAC Nodes
  - g. Create Job Role separation Operating system
  - h. Configure the Linux Servers for Oracle
  - i. Configure RAC nodes for remote access
  - j. Install and configure ASMLib 2.0
3. Oracle RAC 11g Release 2 (11.2.0.3)
  - a. Configure the system in preparation to support the Oracle Database
  - b. Install Oracle RAC on a local filesystem by using a typical install
  - c. Configure a general-purpose Oracle database installation assuming virtual disk is used on a local filesystem.
4. E-Business Suite 12.1.1
  - a. Use the rapid installer

## Appendix B - Test Configurations

### Hardware

- Servers - 3 Dell PowerEdge R610 servers (2-node cluster + console manager)
- Storage - Dell Equallogic (iSCSI protocol)
- Network – Cisco 29605

### Software

#### Oracle VM with Templates

- Oracle VM Server 3.1.1 product
- Oracle VM Manager product
- Oracle VM template for Oracle Linux OL 5.7 64-bit standalone server
- Oracle VM template for RAC 11.2.0.3
- Oracle VM template for E-Business Suite 12.1.1

#### VMware

- VMware vSphere 5 with vCenter
- Oracle RAC 11g R2 (11.2.0.3)
- Oracle Linux OL 5.7 64-bit standalone server
- E-Business Suite 12.1.1
- Weblogic

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