# Introduction

When i started reading the books 'Getting Started with ORACLE SOA Suite 11g R1' (by Heidi Buelow et al.) and 'SOA Suite 11G Handbook' (by Lucas Jellema) i needed a running SOA Suite 11g environment to be able to do the exercises. As a Mac user i use VM Ware to virtualize my educational environments, preferably on a Linux operating system to minimize the cost of licenses and reduce the overhead of the guest operating system on my host operating system. Both books do contain installation guidelines, but are focussed on installation of the SOA Suite 11g on a Microsoft Windows operating system. Although the getting started handbook does give you some hints how to tune the environment, the performance, on a system with the suggested 3Gb RAM, is to low to consider it workable.

This document describes step-by-step how to get an up and running SOA Suite 11g R1 environment with a minimal environment. The definition of a minimal environment is relative. The installation is resource intensive, so the phrase 'less is more' is not applicable here. I got this VM running on a Macbook Pro with a 2.6 Ghz Core 2 Duo processor, 6GB RAM and a Hitachi 7200rpm hard disk. Although this document describes how to install Oracle SOA Suite on Oracle Enterprise Linux in a VM Ware Fusion virtual machine. It generally can be used on any virtual or bare-metal system running any supported Linux variant.

When completing the installation process, the environment will reassemble the schema below.

Dutch tilt
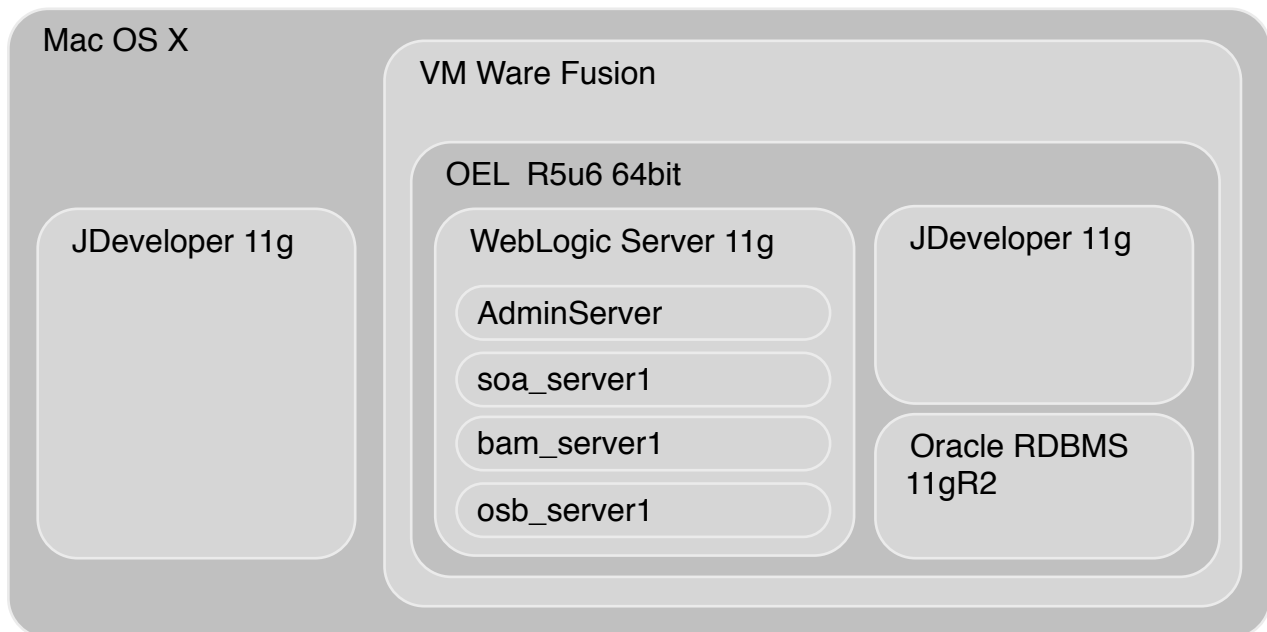
Preparation

Download the necessary software from the following Oracle websites;

https://edelivery.oracle.com/linux

Part Number	Name
V24479-01	Oracle Linux Release 5 Update 6 for x86_64 (64 Bit)

https://edelivery.oracle.com/

Part Number	Name
V24338-01	Oracle WebLogic Server 11gR1 (10.3.4) Generic and Coherence
V24311-01	Oracle Fusion Middleware Repository Creation Utility 11g (11.1.1.4.0) for Linux x86
V24313-01	Oracle SOA Suite 11g Patch Set 3 (11.1.1.4.0)
V24372-01	Oracle JDeveloper 11g and Oracle Application Development Framework 11g (11.1.1.4.0)
V24330-01	Oracle Complex Event Processing 11g (11.1.1.4.0) for Linux x86-64
V24316-01	Oracle Service Bus 11g (11.1.1.4.0)
V17530-01	Oracle Database 11g Release 2 (11.2.0.1.0) for Linux x86-64
V17532-01	Oracle Database 11g Release 2 Client (11.2.0.1.0) for Linux x86-64

http://www.oracle.com/technetwork/java/javase/downloads/index.html

Part Number	Name
Java SE 6 Update 21+	Download the Java SE 1.6.0 with build 21 or higher for Linux x64 from Oracle Technology Network. If you have the choice select the jdk-6u??-linux-x64-**rpm**.bin instead of the jdk-6u??-linux-x64.bin file.

Expand the zip files in a folder labeled "Soa_Suite_Components", make sure you unzip both parts of Oracle Database 11gR2 in the same folder. I chose to unzip each product to a sub-directory labeled with the partnumber, resulting in a directory-structure similar to the example below. The paths used in following instructions will be based on this directory structure.

```
.
|-- JDK
|   `-- jdk-6u23-linux-x64-rpm.bin
|-- V17530-01
|   `-- database
|-- V17532-01
|   `-- client
|-- V24311-01
|   |-- BC4J
|   |-- assistants
|   |-- bin
/   /
.   .
/   /
|   |-- relnotes
|   |-- util
|   `-- xdk
|-- V24313-01
|   |-- Disk1
|   |-- Disk2
|   |-- Disk3
|   |-- Disk4
|   `-- Disk5
|-- V24316-01
|   |-- Disk1
|   `-- Disk2
|-- V24330-01
|   `-- ofm_ocep_linux_11.1.1.4.0_64_disk1_1of1.bin
|-- V24338-01
|   `-- wls1034_generic.jar
|-- V24372-01
|   |-- extras
|   |-- install_guide
|   |-- jdev_extensions
|   |-- jdevstudio11114install.jar
|   `-- middleware_extensions
`-- V24479-01
    `-- Enterprise-R5-U6-Server-x86_64-dvd.iso
```

Create a Virtual Machine

Create in Fusion a new Virtual Machine using the Virtual Machine Assistant. Use the following information as a guideline through the assistant steps.

Introduction	Continue without disc
Installation Media	Create a custom virtual machine
Operating System	Linux, Oracle Enterprise Linux 64-bit
Finish	Finish

Use the following information as a guideline finalizing your VMs configuration. You can change the configuration by selecting Virtual Machine->Settings... in the fusion menu-bar.

|	
Sharing	Enable the option 'Share folders on your Mac' and add the previously created folder "Soa_Suite_Components" with "Read&Write" permissions.
Processor & RAM	Select "1 processor core" and at least 4096MB RAM
Advanced	Preferred virtualization *Intel VT-x* or *Intel VT-x with EPT* if supported by your processor (Xeon, i5, i7). Hard disk buffering *dis-abled*
Printers	Disabled
Network	NAT
Hard Disk	Replace the current harddisk definition by a SCSI harddisk of 50GB. Select the option "Pre-allocate disk space" and disable the option "Split into 2GB files".
Sound	Disabled
USB Devices	Disable "Enable USB 2.0 Support" and remove the USB Controller
Other Devices	Remove the Serial Port

By default the CD/DVD drive follows the HDD in the VMs BIOS boot order of devices. Therefore when it is required to boot from CD/DVD with a VM which already has been installed with an operating-system, the VM will boot from the HDD instead of the CD/DVD. You can change the boot order of devices in the BIOS. The challenge only is to get in the BIOS setup which requires that you press function key 12 within a second or two after powering up the VM. There is a less frustrating to open the BIOS setup.

Make sure that the VM has been shutdown. Open in Fusion the *Virtual Machine Library* window, menu-bar->Window->Virtual Machine Library. Select the VM, ctrl-click and select *Show in Finder. A new finder window is opened and the Virtual Machine package is selected. Control-click on the VM Package and select Show Package Contents*. A new finder window is opened again showing the contents of the package. Find the file with the extension .vmx. When you named your VM *SOA_SUITE_11G_OL_R5_64BIT*, the name of the file will be *SOA_SUITE_11G_OL_R5_64BIT.vmx*. Open this file with an text editor, e.g. [fraise](#) and add the line shown below anywhere in the file and save the file.

```
bios.forceSetupOnce = "TRUE"
```

Boot the VM and the BIOS setup page will be opened once. If VMware fusion reports a *Dictionary problem, when booting the VM, the previously added line to the vmx-file was*

probably already present. Then remove one of the two similar configuration options and make sure the remaining option has the value "TRUE". When the BIOS setup page is opened, change the boot order of the drive. Use the following screenshot as a guide. When done exit the bios with saving the changes.

Dutch tilt
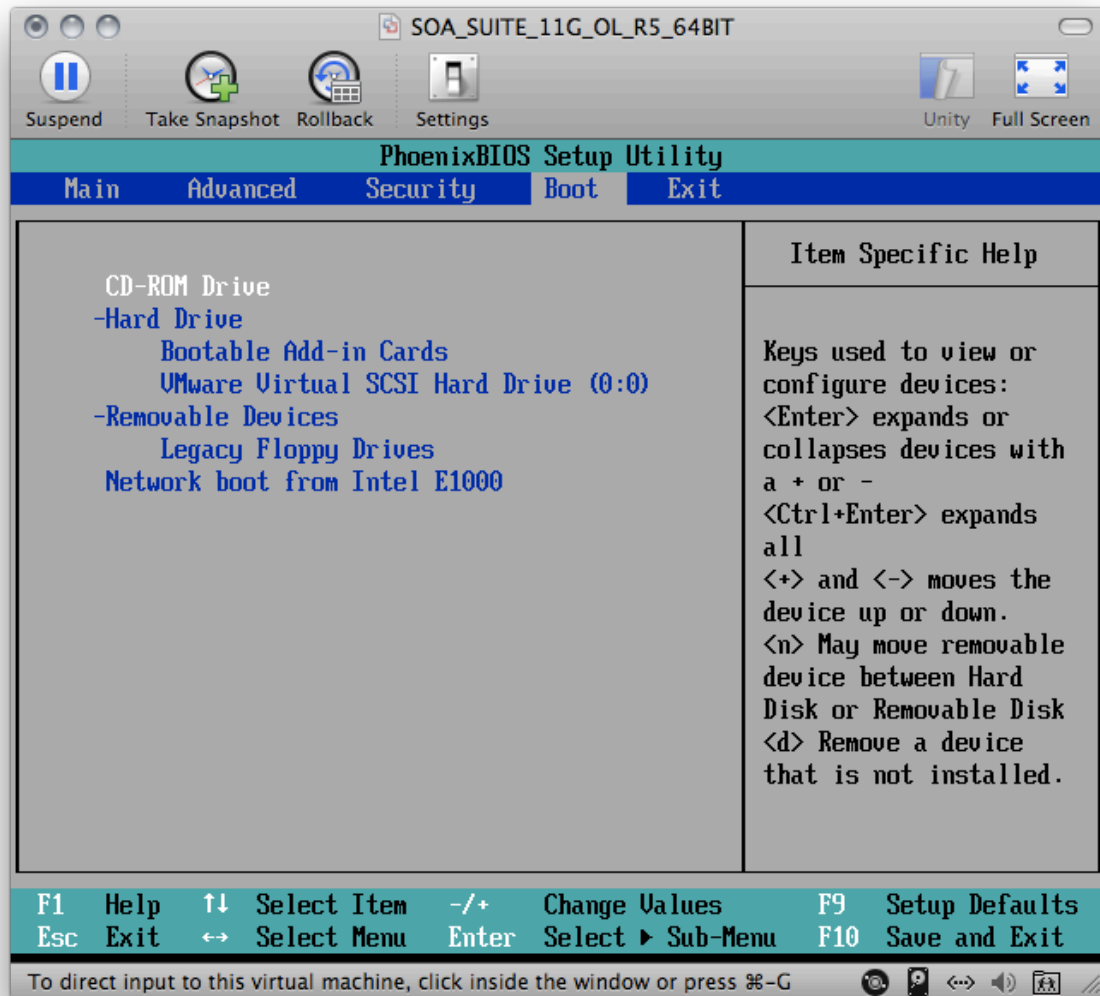
Oracle Enterprise Unix installation

Configure the VMs CD/DVD device to use the Oracle Linux ISO file as a the disc image and boot the virtual machine. Use the information below when going through the installation steps.

Boot	Press <ENTER> to install in graphical mode
CD Found	Skip the media test
Welcome	Next
Install language	English (English)
Keyboard	U.S. English
Warning pop-up	Yes
Partitioning	Remove linux partitions on selected drives and create default layout
Warning pop-up	Yes
Network devices	IP4 Manual Configuration, Automatically obtain IP address settings with dhcp. Automatically obtain DNS information from provider. Disable the IPv6 support
Hostname	soasuite11g
Misc. Settings	Set your Gateway and DNS if required. When leaving the fields blank select "Continue" in the "Error With Data" pop-up's.
Region	Select your region
Root password	Welcome1
Optional Software	Select "Software Development"

Reboot your VM and then configure OEL using the information below.

Firewall	Disabled
SELinux	Disabled

Reboot once again and logon as root. Now install VMware Tools by selecting "Virtual Machine"->"Install VMware tools" from the VMware menu-toolbar.
If it is the first time you install VMware tools on a linux VM, the tools will be downloaded. Select "Install" in the pop-up menu. Open a Terminal session(Applications->Accesories->Terminal) and extract the VMware Tools tar file to /tmp

```
tar -xzf /media/VMware\ Tools/VMwareTools-8.4.5-332101.tar.gz -C /
tmp
```

Start the VMware tools installation by entering the instructions below in the terminal. You can accept all default settings during the installation process. To enable advance X features follow the instructions shown in the last lines of the output of the VMware Tools installer.

```
cd /tmp/vmware-tools-distrib
./vmware-install.pl
```

Open the file /etc/hosts with vi. If you are not familiar with vi, take a look here. Verify if the content of the file matches the example below and make if necessary changes to the file.

```
# Do not remove the following line, or various programs
# that require network functionality will fail.
127.0.0.1               localhost localhost.localdomain
172.16.243.132          soasuite11g soasuite11g.localdomain
```

Disable unnecessary processes by executing the following instructions in Terminal.

```
chkconfig --levels 345 sendmail off
chkconfig --levels 345 bluetooth off
chkconfig --levels 345 cups off
chkconfig --levels 345 hplip off
chkconfig --levels 345 smartd off
chkconfig --levels 345 isdn off
chkconfig --levels 345 nfslock off
chkconfig --levels 345 readahead_early off
chkconfig --levels 345 readahead_later off
chkconfig --levels 345 setroubleshoot off
chkconfig --levels 345 pcscd off
```

Finally reboot your VM to finalize the installation process.

Oracle Database 11gR2 installation

Configure the VMs CD/DVD device to use the Oracle Linux ISO file once as the disc image and make sure it is connected. Logon as root to OEL and start a Terminal session. Install additional required Linux packages by executing the instructions below.

```
cd /media/Oracle\ Linux\ Server\ dvd\ 20110119/Server/
rpm -Uvh sysstat-* unixODBC-2* unixODBC-devel-2* libaio-devel-*
```

Create the necessary user, group and directory-structure by executing the instructions below in the Terminal session.

```
/usr/sbin/groupadd oracle
/usr/sbin/useradd -m -g oracle oracle
echo Welcome1 | passwd --stdin oracle
mkdir -p /data/app/oracle
chown -R oracle:oracle /data/app
chmod -R 775 /data/app
```

Now test if the account *oracle* with password *Welcome1* has been successfully created by logging of (System->Log Out root...) and logging on using the username *oracle*.

Now you can start the installation of Oracle DB 11gR2. Log on as *oracle* and start a Terminal session.

```
cd /mnt/hgfs/Soa_Suite_Components/V17530-01/database
```

Dutch tilt

```
./runInstaller
```

Use the information in the table below to guide you through the installation process.

Option	Action
Configure Security Updates	Leave the fields *Email* and *My Oracle support password* empty and deselect *I wish to receive security updates via My Oracle Support*
Installation Option	Create and configure a database
System Class	Desktop Class

Typical Installation	Oracle base:
	    /data/app/oracle
	Software Location:
	    /data/app/oracle/product/11.2.0/dbhome_1
	Database file loc.:
	    /data/app/oracle/oradata
	Edition:
	    Standard Edition One
	Character set:
	    Unicode (AL32UTF8)
	OSDBA Group:
	    dba
	Global Database Name:
	    orcl
	Admin password:
	    Welcome1

Create Inventory	Inventory Directory:
	    /data/app/oraInventory
	orainventory Group Name:
	    dba

Prerequisite Checks	Select *Fix & Check Again* Open a new terminal session an execute the fixup scripts as root by executing the instruction below. After starting the script a password is requested. Type here the password of root (Welcome1). `su -c /tmp/CVU_11.2.0.1.0_oracle/runfixup.sh` After the script has been executed, select *OK* in the pop-up window *Execute Fixup Scripts*.
Summary	Select *Finish*.

Dutch tilt

The Database Configuration Assistant will finally show a summary of the database creation process. If necessary take notes, and select *OK* to finalize the database creation process. To complete the installation process, execute the scripts shown in the *Execute Configuration scripts* pop-up window. Open a new terminal session an execute the scripts as root by executing the instructions one by one below. After starting each script the root-password is requested, type here the password of root (Welcome1). Accept all defaults for the requested paths by pressing *enter*.

```
su -c /data/app/oraInventory/orainstRoot.sh
su -c /data/app/oracle/product/11.2.0/dbhome_1/root.sh
```

Select *OK* in the *Execute Configuration scripts* pop-up window and select *Finish* in the *Installer* window. Note the EM Database Control URL:
`https://soasuite11g:1158/em`

Oracle environment and Auto Startup and Shutdown

If you would restart the system after the installation of the database, you have to start the Database, Listener and Enterprise Manager manually. Take the next few steps to automatically start these processes when booting the OS.

Logon as root to OEL and start a Terminal session.
Make changes to the .bashrc file of user oracle by running the script below in the terminal session.

```
su - oracle
cat >> /home/oracle/.bashrc << EOF
ORACLE_HOSTNAME=soasuite11g
ORACLE_BASE=/data/app/oracle/product/11.2.0
ORACLE_HOME=${ORACLE_BASE}/dbhome_1
ORACLE_UNQNAME=orcl
ORACLE_SID=orcl
LD_LIBRARY_PATH=$ORACLE_HOME/lib
PATH=$PATH:$ORACLE_HOME/bin

export ORACLE_BASE ORACLE_HOME ORACLE_SID ORACLE_UNQNAME
LD_LIBRARY_PATH PATH
export ORACLE_HOSTNAME
EOF
exit
```

Open the file `/etc/oratab` with vi. Change the last line of the line for SID *orcl* from *N* to *Y.* The line will look like similar to `orcl:/data/app/oracle/product/11.2.0/dbhome_1:Y` , save the file and leave the editor.

Create the file `oracle` in directory `/etc/init.d` by copying the content below to the terminal session.

```
cat >> /etc/init.d/oracle << EOF
```

```
#!/bin/bash
#
# oracle Init file for starting and stopping
# Oracle Database. Script is valid for 10g and 11g versions.
#
# chkconfig: 35 80 30
# description: Oracle Database startup script

# Source function library.

. /etc/rc.d/init.d/functions

ORACLE_OWNER="oracle"
ORACLE_HOME="/data/app/oracle/product/11.2.0/dbhome_1"

case "\$1" in
start)
echo -n \$"Starting Oracle DB:"
su - \$ORACLE_OWNER -c "\$ORACLE_HOME/bin/dbstart \$ORACLE_HOME"
echo "OK"
;;
stop)
echo -n $"Stopping Oracle DB:"
su - \$ORACLE_OWNER -c "\$ORACLE_HOME/bin/dbshut \$ORACLE_HOME"
echo "OK"
;;
*)
echo \$"Usage: \$0 {start|stop}"
esac
EOF
```

Execute the following instructions to change the permissions and setting runlevel execution of the newly created oracle script.

```
chmod 750 /etc/init.d/oracle
chkconfig --add oracle --level 0356
```

Create the file `oraemctl` in directory `/etc/init.d` by copying the content below to the terminal session.

```
cat >> /etc/init.d/oraemctl << EOF
#!/bin/bash
#
# oraemctl Starting and stopping Oracle Enterprise Manager
# Database Control.
# Script is valid for 10g and 11g versions.
#
# chkconfig: 35 80 30
# description: Enterprise Manager DB Control startup script

# Source function library.
```

```
. /etc/rc.d/init.d/functions

ORACLE_OWNER="oracle"
ORACLE_HOME="/data/app/oracle/product/11.2.0/dbhome_1"
ORACLE_UNQNAME="orcl"

case "\$1" in
start)
echo -n \$"Starting Oracle EM DB Console:"
su - \$ORACLE_OWNER -c "\$ORACLE_HOME/bin/emctl start dbconsole"
echo "OK"
;;
stop)
echo -n \$"Stopping Oracle EM DB Console:"
su - \$ORACLE_OWNER -c "\$ORACLE_HOME/bin/emctl stop dbconsole"
echo "OK"
;;
*)
echo \$"Usage: \$0 {start|stop}"
esac
EOF
```

Execute the following instructions to change the permissions and setting runlevel execution of the newly created oracle script.

```
chmod 750 /etc/init.d/oraemctl
chkconfig --add oraemctl --level 0356
```

Verify the changes by stopping Oracle Enterprise Manager and Database instance using the scripts. Execute the following two instructions in the terminal window, each instruction should report *OK* as a result.

```
/etc/init.d/oracle stop
/etc/init.d/oraemctl stop
```

```
[root@soasuite11g ~]# /etc/init.d/oracle stop
Stopping Oracle DB:Processing Database instance "orcl": log file /data/app/oracl
e/product/11.2.0/dbhome_1/shutdown.log
OK
[root@soasuite11g ~]# /etc/init.d/oraemctl stop
Stopping Oracle EM DB Console:Oracle Enterprise Manager 11g Database Control Rel
ease 11.2.0.1.0
Copyright (c) 1996, 2009 Oracle Corporation.  All rights reserved.
https://localhost:1158/em/console/aboutApplication
Stopping Oracle Enterprise Manager 11g Database Control ...
 ...  Stopped.
OK
[root@soasuite11g ~]# ▯
```

Reboot the system and log on as *oracle*. Test the automatic startup of the Oracle DB and EM by opening the url https://soasuite11g:1158/em in Firefox. Log on as user *SYS* with password *Welcome1* as *SYSDBA*. The page shows the status for database instance *orcl*, verify that the status is *up*.

Database Instance: orcl

| Home | Performance | Availability |

General

Shutdown Black Out

Status **Up**
Up Since **Feb 8, 2011 7:58:11 AM CET**
Instance Name **orcl**
Version **11.2.0.1.0**
Host localhost
Listener LISTENER_localhost

Oracle DB Memory Optimization

It is not necessary to start Oracle Enterprise Manager on boot. Instead of this OEM can be started manually when needed. OEM allocates approximately 800M in memory, which is a considerable amount in a memory constrained system. You can prevent starting OEM on boot by changing the runlevel of the oraemctl script. To change the runlevel, logon as root to OEL and start a Terminal session. Then execute the following statements.

```
su - root
chkconfig --level 356 oraemctl off
exit
```

If necessary OEM can be started manually by using the following instructions in Terminal when logged on as oracle or soaadmin

```
su - root
/etc/init.d/oraemctl start
```

The memory target for Oracle DB 11gR2 after an Standard Edition One installation is 800M. This target can be set to the minimum values by logging on as oracle to OEL and starting a Terminal session, then execute the following script.

```
cd /data/app/oracle/product/11.2.0/dbhome_1/bin
./sqlplus / as SYSDBA << EOF
alter system set memory_max_target=152M scope=spfile;
alter system set memory_target=152M scope=spfile;
startup force;
EOF
```

The script should finish with an output similar to;

```
Total System Global Area  158662656 bytes
Fixed Size                  2211448 bytes
Variable Size             121635208 bytes
Database Buffers           29360128 bytes
Redo Buffers                5455872 bytes
Database mounted.
Database opened.
```

Repository Creation

Make sure you are logged on as user *oracle*. Open a new terminal session an execute the instructions below to start the Repository Creation Utility.

```
cd /mnt/hgfs/Soa_Suite_Components/V24311-01/bin
./rcu
```

Use the information in the table below to guide you through the repository creation process.

Option	Action
Welcome	Select *Next*
Create Repository	Select *Create*

Dutch tilt

Option	Action
Database Connection Details	Database Type : Oracle Database Host Name : localhost Port : 1521 Service Name : orlc Username : sys Password : Welcome1 Role : SYSDBA In the "Checking Prerequisites" pop-up window an overview is shown of the prerequisite test results. Validate that all prerequisites have been met, then press *OK*
Select Components	Select at least *SOA and BPM Infrastructure*, this will automatically select *Metadata Services* under *AS Common Schemas*. In the "Checking Prerequisites" pop-up window an overview is shown of the prerequisite test results. Validate that all prerequisites have been met, then press *OK*
Schema Passwords	Select *Use same passwords for all schemas* and use *Welcome1* as a password.
Map Tablespaces	Select *Next* Confirm the tablespace creation by selecting *OK* in the *Repository Creation Utility* pop-up window.
Summary	Select *Create*
Completion Summary	Verify that the status of each component is equal to success and select *close*. Database details: Host Name: localhost Port: 1521 Service Name: ORCL Connected As: sys Operation: Create RCU Logfile: /data/app/oracle/product/11.2.0/logdir.2011-02-08_09-39/rcu.log Component Log Directory: /data/app/oracle/product/11.2.0/logdir.2011-02-08_09-39 Execution Time: 1 minute 20 seconds Prefix for (prefixable) Schema Owners:DEV <table><tr><th>Component</th><th>Status</th><th>Logfile</th><th>Time</th></tr><tr><td>Metadata Services</td><td>Success</td><td>mds.log</td><td>00:04.582(sec)</td></tr><tr><td>SOA Infrastructure</td><td>Success</td><td>soainfra.log</td><td>00:22.368(sec)</td></tr><tr><td>Business Activity Monitoring</td><td>Success</td><td>bam.log</td><td>00:10.317(sec)</td></tr><tr><td>User Messaging Service</td><td>Success</td><td>orasdpm.log</td><td>00:02.107(sec)</td></tr></table>

WebLogic installation

Logon as root to OEL and start a Terminal session.

Oracle Weblogic Server and SOA Suite require at least Sun JDK 1.6.0_21+. Verify the current default Java version by entering the instruction `java --version` in the Terminal session. If the current version does not meet the minimum requirements, upgrade java to the minimum level bu executing the following instructions.

Execute the instructions below in a Terminal-session, this will start the installation of the JDK. Follow the instructions on screen.

```
cd /tmp
cp /mnt/hgfs/Soa_Suite_Components/JDK/* /tmp
chmod u+x jdk-6u23-linux-x64-rpm.bin
./jdk-6u23-linux-x64-rpm.bin
```

Test is the JDK has been successfully installed by entering the instruction `/usr/java/latest/bin/java -version` in the terminal, it should report *java version "1.6.0_23"* or similar build higher than 21. Now make this installed java version the default version by executing the following instructions in the terminal.

```
cd /usr/java
mv default old
ln -s /usr/java/jdk1.6.0_23 default
update-alternatives --install "/usr/bin/java" "java" \
"/usr/java/jdk1.6.0_23/bin/java" 1
update-alternatives --set java \
/usr/java/jdk1.6.0_23/bin/java
```

Check if the installed JDK is the default java by executing `java -version` in the terminal.

Create the necessary user, group and directory-structure to install Weblogic and SOA Suite with a dedicated (not a root) user by executing the instructions below in the Terminal session.

```
/usr/sbin/useradd -m -g oracle soaadmin
echo Welcome1 | passwd --stdin soaadmin
mkdir -p /data/middleware
chown -R soaadmin:oracle /data/middleware
chmod -R 775 /data/middleware
```

Now test if the account soaadm with password Welcome1 has been successfully created by logging of (System->Log Out root...) and logging on using the username soaadmin.

Start the Weblogic installer by executing the instructions below in the terminal.

```
cd /mnt/hgfs/Soa_Suite_Components/V24338-01
java -d64 -jar wls1034_generic.jar
```

Dutch tilt

Use the information in the table below to guide you through the installation process.

Option	Action
Welcome	Next

Choose Middleware Home Directory	Middleware Home Type:
	    Create a new Middleware Home
	
	Middleware Home Directory:
	    /data/middleware

Register for Security Updates	Email: \<leave empty\> I wish to receive security updates via My Oracle Support: de-select Support Password: \<leave empty\>
Choose Install Type	Typical
JDK Selection	By default the previously installed JDK should be selected. Make sure *Sun SDK 1.6.0* with at least build 21 is selected in the *Local JDK* pane.
Choose Product Installation Directories	Weblogic Server: /data/middleware/wlserver_10.3 Oracle Coherence: /data/middleware/coherence_3.6
Installation Summary	Next
Installation Complete	Run Quickstart: de-select

Install SOA Suite

SOA Suite requires that the kernel parameters for the soft and hard limit of open files are set to a minimum of 4096. Logon as root to OEL and start a terminal session. Run the script below in the terminal and shutdown and reboot the system.

```
cat >> /etc/security/limits.conf << EOF
soaadmin soft nofile 4096
soaadmin hard nofile 4096
```

```
EOF
```

Logon as soaadmin to OEL and start a terminal session. Start the SOA Suite Installer by entering the following instructions on the terminal.

```
cd /mnt/hgfs/Soa_Suite_Components/V24313-01/Disk1
./runInstaller -jreLoc /usr/java/default/jre
```

Use the information in the table below to guide you through the installation process.

Option	Action
Welcome	Next
Install Software Updates	Skip Software Updates
Prerequisite Checks	All checks should be passed
Specify Installation Location	Oracle Middleware Home: /data/middleware Oracle Home Directory: Oracle_SOA1
Application Server	Weblogic Server
Installation Summary	Select *Install*
Installation Process	Select *Next*
Installation Complete	Select *Finish*

Configure SOA Suite

The SOA Suite software must be configured in WebLogic by creating a new Domain and configuring the SOA Suite software.

Logon as soaadmin to OEL and start a terminal session. Start the Fusion Middleware Configuration Wizard by entering the following instructions on the terminal.

```
cd /data/middleware/Oracle_SOA1/common/bin
./config.sh
```

Use the information in the table below to guide you through the installation process.

Option	Action
Welcome	Create a new Weblogic domain
Select Domain Source	Generate a domain configured automatically to support the following products: * Basic Weblogic Server Domain * Oracle BPM Suite * Oracle SOA Suite * Oracle Enterprise Manager * Oracle Business Activity Monitoring * Oracle WSM Policy Manager * Oracle JRF

Specify Domain Name and Location	Domain name:
	    soa_domain
	Domain location:
	    /data/middleware/user_projects/domains
	Application location:
	    /data/middleware/user_projects/applications

Configure Administrator User Name and Password	Name: weblogic User password: Welcome1 Confirm user password: Welcome1 Description: This user is the default administrator.
Configure Server Start Mode and JDK	Weblogic Domain Startup Mode: Development Mode Available JDKs: By default the previously installed JDK should be selected. Make sure *Sun SDK 1.6.0* with at least build 21 is selected in the *Local JDK* pane.
Configure JDBC Component Schema	Select the following Component Schemas * BAM Schema * SOA Infrastructure * User Messaging Service * OWSM MDS Schema * SOA MDS Schema Host Name: localhost Schema Password: Welcome1
Test JDBC Component Schema	All connections should be tested successfully.
Select Optional Configuration	Do not select any additional configurations and select *Next*.
Configuration Summary	Select *Create*

Option	Action
Creating Domain	Select *Done*

JDeveloper installation

Logon as soaadmin to OEL and start a terminal session. Start the Fusion Middleware Configuration Wizard by entering the following instructions on the terminal.

```
cd /mnt/hgfs/Soa_Suite_Components/V24372-01
java -jar ./jdevstudio11114install.jar
```

Use the information in the table below to guide you through the installation process.

Option	Action
Welcome	*Next*
Choose Middleware Home Directory	Middleware Home Type: Use an Existing Middleware Home Middleware Home Directory: /data/middleware
Choose Products and Components	Use default selection
JDK Selection	Verify that a local JDK with at least version 1.6.0 build 21 is selected.
Confirm Product Installation Directories	Select *Next*
Installation Summary	Select *Next*
Installation Complete	De-select *Run Quickstart*

Create a shortcut to JDeveloper by *Control-Click* on the Desktop and selecting *Create Launcher...* from the pop-up menu. Use the information in the table below to fill in the properties.

Option	Property
Icon	/data/middleware/jdeveloper/jdev/bin/coffee.png
Type	Application
Name	JDeveloper 1.1.1.4.x
Command	/data/middleware/jdeveloper/jdev/bin/jdev

Start JDeveloper and select *Default Role*, de-select *always prompt for role selection on startup.* De-select *Allow automated usage reporting to Oracle* in window *Oracle Usage Tracking* window.

Start the JDeveloper update wizard by selecting *Help->Check for Updates...* in the menu-bar. Use the information in the table below to guide you through the wizard.

Option	Action
Welcome	*Next*
Source	Install From Local File: /mnt/hgfs/Soa_Suite_Components/V24372-01/middleware_extensions/soa-jdev-extension.zip Restart JDeveloper
Source	Install From Local File: /mnt/hgfs/Soa_Suite_Components/V24372-01/middleware_extensions/bpm-jdev-extension.zip Restart JDeveloper

Installation OSB

Logon as soaadmin to OEL and start a terminal session. Start the OSB Installer by entering the following instructions on the terminal.

```
cd /mnt/hgfs/Soa_Suite_Components/V24316-01/Disk1/runInstaller
./runInstaller -jreLoc /usr/java/default/jre
```

Use the information in the table below to guide you through the installation process.

Option	Action
Welcome	*Next*
Install Software Updates	Skip Software Updates
Installation Location	Oracle Middleware Home: /data/middleware Oracle Home Directory: Oracle_OSB1
Installation Type	Typical
Prerequisite Checks	All checks should be have a status passed

Option	Action
Product Home Location	Weblogic Server Location: /data/middleware/wlserver_10.3 OEPE Location: <Leave empty>
Installation Summary	Select *Install*
Installation Progress	Next
Installation Completed	Finish

Now extend the WLS domain with OSB by executing the OSB Configuration Wizard

```
cd /data/middleware/Oracle_OSB1/common/bin
./config.sh
```

Use the information in the table below to guide you through the installation process.

Option	Action
Welcome	*Extend an existing WebLogic domain*
Select a Weblogic Domain Directory	Select the Domain Directory: /data/middleware/user_projects/domains/soa_domain
Select Extension Source	Extend my domain automatically to support the following added products: * Oracle Services Bus * Weblogic Advanced Web Services for JAX-RPC Extension * Oracle Service Bus OWSM Extension
Configure JDBC Component Schema	Select the following Component Schemas * OSB JMS Reporting Provider Vendor: Oracle Driver: *Oracle;'s Driver (Thin) for Instance connections Schema Owner: DEV_SOAINFRA Schema Password: Welcome1 Host Name: localhost DBMS/Service: ORCL Port: 1521
Test JDBC Component Schema	All connections should be tested successfully.

Option	Action
Welcome	*Extend an existing WebLogic domain*
Select a Weblogic Domain Directory	Select the Domain Directory: /data/middleware/user_projects/domains/soa_domain
Select Extension Source	Extend my domain automatically to support the following added products: * Oracle Services Bus * Weblogic Advanced Web Services for JAX-RPC Extension * Oracle Service Bus OWSM Extension
Configure JDBC Component Schema	Select the following Component Schemas * OSB JMS Reporting Provider Vendor: Oracle Driver: *Oracle;'s Driver (Thin) for Instance connections Schema Owner: DEV_SOAINFRA Schema Password: Welcome1 Host Name: localhost DBMS/Service: ORCL Port: 1521
Test JDBC Component Schema	All connections should be tested successfully.

launchers (shortcuts) to the scripts. Follow the next steps to create the necessary launchers for the Admin server and Managed (soa_server1, bam_server1).

Logon as soaadmin to OEL and start a terminal session. Create a shortcut to AdminServer by *Control-Click* on the Desktop and selecting *Create Launcher...* from the pop-up menu. Use the information in the table below to fill in the properties.

Option	Property
Icon	
Type	Application in Terminal Optionally you can change it to Application, preventing an open terminal on your desktop while running the AdminServer
Name	Start AdminServer
Command	/data/middleware/user_projects/domains/soa_domain/ startWebLogic.sh

Create a shortcut to start the soa_server1 by *Control-Click* on the Desktop and selecting *Create Launcher...* from the pop-up menu. Use the information in the table below to fill in the properties.

Option	Property
Icon	
Type	Application in Terminal Optionally you can change it to Application, preventing an open terminal on your desktop while running the AdminServer
Name	Start soa_server1
Command	/data/middleware/user_projects/domains/soa_domain/bin/ startManagedWebLogic.sh soa_server1

Create a shortcut to start the bam_server1 by *Control-Click* on the Desktop and selecting *Create Launcher...* from the pop-up menu. Use the information in the table below to fill in the properties.

Option	Property
Icon	
Type	Application in Terminal

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Option	Property
Name	Start bam_server1
Command	/data/middleware/user_projects/domains/soa_domain/bin/ startManagedWebLogic.sh bam_server1

Create a shortcut to start the osb_server1 by *Control-Click* on the Desktop and selecting *Create Launcher...* from the pop-up menu. Use the information in the table below to fill in the properties.

Option	Property
Icon	
Type	Application in Terminal
Name	Start osb_server1
Command	/data/middleware/user_projects/domains/soa_domain/bin/ startManagedWebLogic.sh osb_server1

Now start the *AdminServer* using the launcher and wait till the startup process is completed. The AdminServer startup process is completed when the message `Server started in RUNNING mode` is written to the terminal.

Continue starting the Managed Servers *soa_server1*, osb_server1 and *bam_server1* one at a time using the launcher. The servers startup process is completed when the message `Server started in RUNNING mode` is written to the terminal. Stop the server by pressing *Control_C* in the terminal session, then start the next managed server. During the startup a username and password is requested to boot the Weblogic server. Use the username *weblogic* and password *Weblogic1 (*admin credentials of the weblogic domain*)* here to log on. During the startup the directory structure for the servers is created under `/data/middleware/user_projects/domains/soa_domain/servers`.
To prevent the login-prompt shown during server startup of the Managed Server, the credentials necessary to boot the Weblogic server can be added to the boot.properties file. Do not continue if you not have started the servers once because the boot.properties file has to be created in the directory structure which is generated during the first startup of the Managed Server.

To create the boot.properties for the soa_server1, osb_server1 and bam_server1, logon as soaadmin to OEL and start a terminal session. Execute the following scripts in the Terminal.

```
mkdir /data/middleware/user_projects/domains/soa_domain/servers/
soa_server1/security
cat >> /data/middleware/user_projects/domains/soa_domain/servers/
soa_server1/security/boot.properties << EOF
```

```
username=weblogic
password=Welcome1
EOF


mkdir /data/middleware/user_projects/domains/soa_domain/servers/
bam_server1/security
cat >> /data/middleware/user_projects/domains/soa_domain/servers/
bam_server1/security/boot.properties << EOF
username=weblogic
password=Welcome1
EOF


mkdir /data/middleware/user_projects/domains/soa_domain/servers/
osb_server1/security
cat >> /data/middleware/user_projects/domains/soa_domain/servers/
osb_server1/security/boot.properties << EOF
username=weblogic
password=Welcome1
EOF
```

All Weblogic servers; AdminServer, soa_server1, osb_server1 and bam_server1 do run in the same domain. Therefore these servers share the same environment settings which are set on startup. A part of these environment settings are the JVM memory settings. To set the JVM memory settings for each server individually, add the code below to the `setSOADomainEnv.sh`. Verify that you are logged on as *soaadmin* and open the file `setSOADomainEnv.sh` in directory `/data/middleware/user_projects/domains/soa_domain/bin`. Add the code below between the last comment statement and the `if [ "${XENGINE_DIR}" = "" ]; then` statement.

```
echo "Server Name:${SERVER_NAME}"
echo -ne "\033]0;"${SERVER_NAME}"\007"

if [ "${SERVER_NAME}" = "soa_server1" ]; then
        echo "Setting USER_MEM_ARGS for soa_Server1"
        echo "| HEAP 640M                              | PermGen 390-512M |"
        echo "| SHORT (YOUNG) 224M    : LONG 416M    |                  |"
        echo "| eden   : s0    : s1    :               |                  |"
        echo "| 168    : 28M   : 28M    :              |                  |"
        USER_MEM_ARGS="-Xms640m -Xmx640m -Xmn224m -XX:SurvivorRatio=8 \
-XX:PermSize=390m -XX:MaxPermSize=512m -XX:+UseSerialGC -d64"
elif [ "${SERVER_NAME}" = "osb_server1" ]; then
        echo "Setting USER_MEM_ARGS for bam_Server1"
        echo "| HEAP 224M                              | PermGen 224M     |"
        echo "| SHORT (YOUNG) 32M     : LONG 192M    |                  |"
        echo "| eden   : s0    : s1    :               |                  |"
        echo "| 24M    : 4M    : 4M     :              |                  |"
        USER_MEM_ARGS="-Xms224m -Xmx224m -Xmn32m -XX:SurvivorRatio=8 \
-XX:PermSize=224m -XX:MaxPermSize=224m -XX:+UseSerialGC -d64"
elif [ "${SERVER_NAME}" = "bam_server1" ]; then
        echo "Setting USER_MEM_ARGS for bam_Server1"
        echo "| HEAP 224M                              | PermGen 250M     |"
        echo "| SHORT (YOUNG) 64M     : LONG 160M    |                  |"
        echo "| eden   : s0    : s1    :               |                  |"
        echo "| 48M    : 8M    : 8M     :              |                  |"
```

Dutch tilt

```
        USER_MEM_ARGS="-Xms224m -Xmx224m -Xmn64m -XX:SurvivorRatio=8 \
-XX:PermSize=250m -XX:MaxPermSize=250m -XX:+UseSerialGC -d64"
elif [ "${SERVER_NAME}" = "AdminServer" ]; then
        echo "Setting USER_MEM_ARGS for AdminServer"
        echo "| HEAP 384M                              | PermGen 320-512M |"
        echo "| SHORT (YOUNG) 64M   : LONG 288M     |                  |"
        echo "| eden  : s0    : s1     :            |                  |"
        echo "| 64M   : 2M    : 2M     :            |                  |"
        USER_MEM_ARGS="-Xms384m -Xmx384m -Xmn64m -XX:SurvivorRatio=32 \
-XX:PermSize=320m -XX:MaxPermSize=512m -XX:+UseSerialGC -d64"
else
        echo "USER_MEM_ARGS not set"
fi
```

The JDK can be optimized further by invoking the Java HotSpot Server instead of the HotSpot client to compile bytecode into machine optimized instructions. When invoking the HotSpot server initialization of the application will be slightly slower but due to further optimization of the bytecode but it will run faster. To enable the HotSpot server in Weblogic servers, the environment variable `PRODUCTION_MODE` must be set to `true`.

Verify that you are logged on as *soaadmin* and open the file `commEnv.sh` in directory `/data/middleware/wlserver_10.3/common/bin`. Add the code below after the statement `JAVA_USE_64BIT=true` which will be approximately at line 143.

```
# Optimize Compiler
PRODUCTION_MODE="true"
```

JDeveloper on Mac OS X

When using JDeveloper and a web browser on the host OS, you will experience a better performance than when running the client applications within the VM. Follow the instructions below to install JDeveloper on Mac OS X.

First verify that java SE 6 64 bit is the prefered JVM. Open the utilities folder by selecting ⌘⇧U in Finder and open Java Preferences. Select the tab *General* in Java Preferences and move the 64-bit Java SE 6 to the top of the list. Close the Java Preferences by selecting ⌘Q.

By default JDeveloper installer is not able to locate the JDK. Open Terminal in OS X by selecting ⌘⇧U in finder and starting Terminal. Execute the following instructions in Terminal. When a password is requested, type your OS X login account.

```
cd /System/Library/Frameworks/JavaVM.framework/Versions/1.6.0/Home
sudo mkdir jre
cd jre
sudo mkdir lib
cd lib
sudo ln -s /System/Library/Frameworks/JavaVM.framework/\
/Versions/1.6.0/classes/classes.jar rt.jar
```

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Start the JDeveloper installer by opening the *jdevstudio11114install.jar* which is in the *Soa_Suite_Components/V24372-01* folder. Use the information in the table below to guide you through the installation process.

Option	Action
Welcome	*Next*
Choose Middleware Home Directory	Middleware Home Type: Use an Existing Middleware Home Middleware Home Directory: Use default
Choose Products and Components	Use default selection
JDK Selection	Use default selection, verify that at least Apple JDK version 1.6 is selected.
Confirm Product Installation Directories	Select *Next*
Installation Summary	Select *Next*
Installation Complete	De-select *Run Quickstart*

JDeveloper will now be installed in subdirectory Oracle/middleware of your home directory. Drag the JDeveloper java application to your dock by dragging the JDeveloper to the dock. You can select ⇧⌘G in Finder to go to a folder. Then enter `~/Oracle/Middleware` as the folder name. The JDeveloper application is in the opened folder.

Start the JDeveloper application and update wizard in JDeveloper by selecting *Help->Check for Updates...* in the menu-bar. Use the information in the table below to guide you through the wizard.

Option	Action
Welcome	*Next*
Source	Install From Local File: Soa_Suite_Components/V24372-01/ middleware_extensions/soa-jdev-extension.zip Restart JDeveloper

Option	Action
Source	Install From Local File: Soa_Suite_Components/V24372-01/ middleware_extensions/bpm-jdev-extension.zip Restart JDeveloper

Finishing up

When connecting from a browser outside you SOA Suite server, e.g. using Safari on your host OS, you need the ip-address of the server. You can retrieve the ip-address by opening a Terminal session on the server and entering the following instruction. The required password is *Welcome1*.

```
su - root -c " ifconfig eth0 | grep 'inet addr:' "
```

To access the SOA components by the hostname of the guest OS from your host OS, add the name of guest Operating System to the hosts file of your host OS. Open Terminal in OS X by selecting ⌘⇧U in finder and starting Terminal. Execute the following instructions in Terminal. When a password is requested, type your OS X login account. (Replace the shown ip-address by the address of the guest os)

```
sudo -s 'echo "172.16.243.132"      soasuite11g >> /etc/hosts'
```

The console URL for the applications installed are shown here. When accessing the applications using a browser outside the server, replace the `localhost` with the ip-address of the SOA Server.

Welcome to Fusion Middleware : http://localhost:7001
Weblogic Server Admin console : http://localhost:7001/console
EM Fusion Middleware Control : http://localhost:7001/em
SOA Composer   : http://localhost:8001/soa/composer
BPM Worklist   : http://localhost:8001/integration/worklistapp
BPM Composer   : http://localhost:8001/bpm/composer
B2B console   : http://localhost:8001/b2b
BAM   : http://localhost:9001/OracleBAM
OSB Admin Console   : http://localhost:7001/sbconsole

Oracle BAM requires internet explorer 7 or 8. I have made an attempt to access the application using Firefox 3.6.13 but it stalls on a missing plug-in. Which plug-in is missing is not reported. On Safari i am able to get the initial logon page when changing the default login agent to Internet Explorer 7 or 8. When making an attempt to logon, nothing happens after entering the credentials and selecting the go button.

Change history

Version	Changes / remarks
0.1	Initial draft
0.2	Initial public release
0.3	Added some application URLs Script setSOADomainEnv.sh modified Added soasuite11g as host in /etc/hosts References to localhost replaced by soasuite11g

Referenced documentation

Installation of Oracle 11g Release 2 (11.2.0.1.0) on RedHat EL 5,
(Oracle) Enteprise Linux 5 and Centos 5

How to Install Java JRE 1.6.0 (Update x) in Linux as the Default Java Runtime, including
Firefox Browser Plugin

What are the Linux x64 RPM Java installation instructions ?

Installing JDeveloper 11g on Mac OS 10.5

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