

Install Clustered Oracle SOA Suite 11g

Marc Kelderman
Solution Architect
<http://orasoftware.blogspot.com>
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Introduction

This document describes how to install and configure a clustered environment for the SOA suite. The clustered environment is based on:

- Two servers;
 - 4 GB internal memory
 - At least 2 CPU/Cores
 - Linux operating system
- Each server contains;
 - 2 managed servers; soa_server and bam_server
 - 1 cluster definition, soa_cluster containing the soa_server
 - 1 admin server; only one is active
- A shared storage
 - Weblogic Server binaries
 - SOA Suite binaries
 - Configuration files
- A database
 - Oracle Database, v10.2 or higher

This document is created based on the following references

- [Oracle Fusion Middleware Requirements](#)
- [Oracle Fusion Middleware Certification](#)
- [Oracle SOA Suite 11g: How To Create All In One AdminServer](#)
- [Oracle Fusion Middleware Enterprise Deployment Guide; Chapter 4 & 5](#)

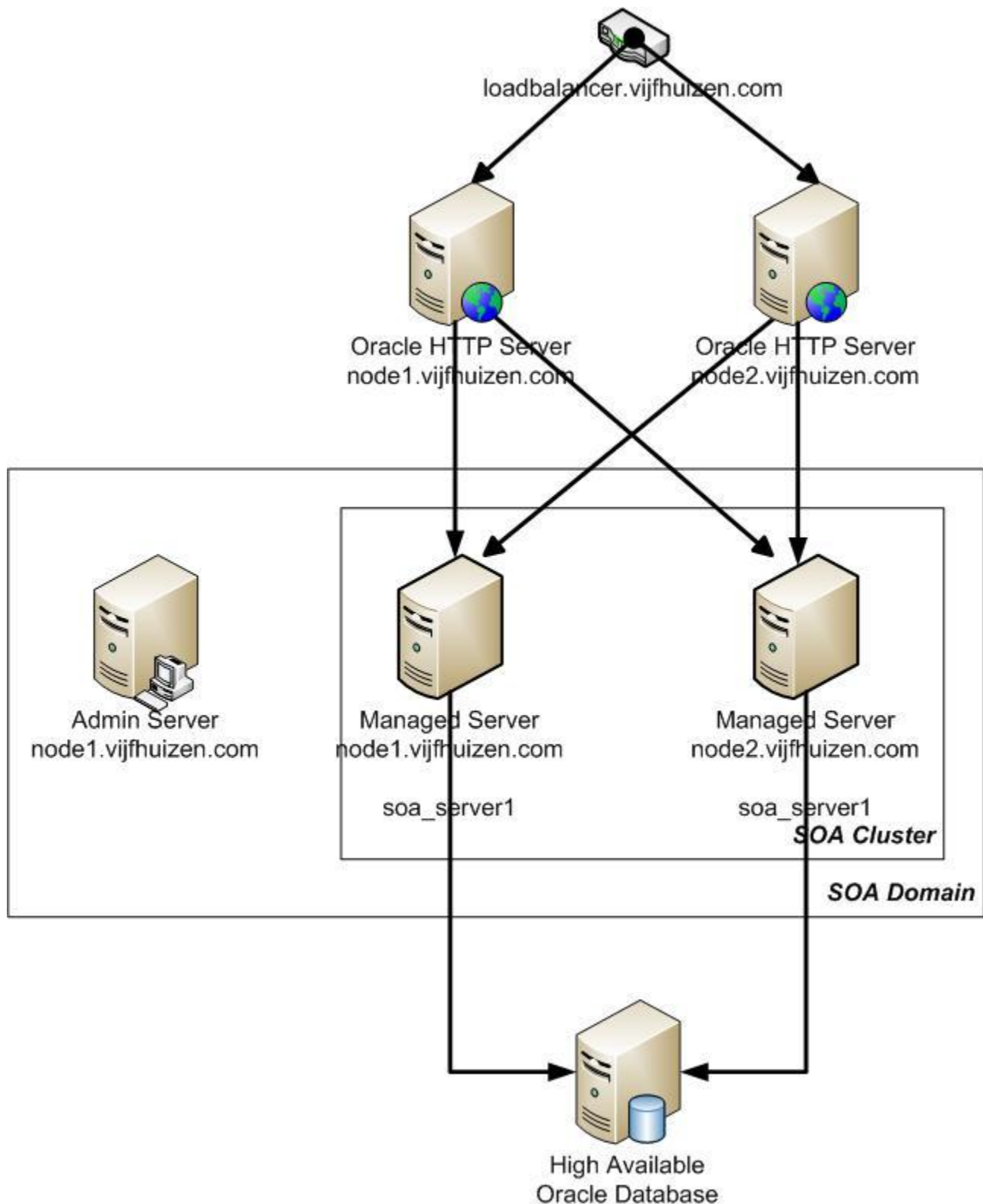
The software can be obtained from

http://www.oracle.com/technology/software/products/middleware/htdocs/fmw_11_download.html

- Oracle Weblogic Server 11g (v10.3.2)
- Oracle SOA Suite 11g (v11.1.1.2.0)
- Oracle Web Tier Utilities (11.1.1.2.0)
- Oracle Repository Creation Utility (11.1.1.2.0)

Environment Setup

The following environment is being installed:



Prerequisites:

We assume that the following software is installed but not configured.

- Oracle Weblogic Server 11g
- Oracle SOA Suite 11g

An Oracle database is up and running and loaded with the SOA repository based on the Oracle Repository Creation Utility.

The document will use the following environmental variables that is used to point to particular directories.

Name	Value	Description
WLS_HOME	/app/oracle/products/11g/fmw	Install directory of Oracle middleware binaries
WLS_SERVER	/app/oracle/products/11g/fmw/wlserver_10.3	Install directory of Oracle Weblogic server
WLS_DOMAIN	/app/oracle/products/11g/admin/domains	The directory of the domain configuration
SOA_DOMAIN	/app/oracle/products/11g/admin/domains/soadomain	The directory of the SOA domain configuration
BAM_DOMAIN	/app/oracle/products/11g/admin/domains/bamdomain	The directory of the BAM domain configuration
ORACLE_HOME	/app/oracle/products/11g/fmw/Oracle_SOA	The directory of the SOA binaries
JAVA_HOME	/usr/java/jdk1.6.0_17	The java6 home directory

```
export WLS_HOME=/app/oracle/products/11g/fmw
export WLS_SERVER=/app/oracle/products/11g/fmw/wlserver_10.3
export WLS_DOMAIN=/app/oracle/products/11g/admin/domains/
export SOA_DOMAIN=/app/oracle/products/11g/admin/domains/soadomain
export BAM_DOMAIN=/app/oracle/products/11g/admin/domains/bamdomain
export ORACLE_HOME=/app/oracle/products/11g/fmw/Oracle_SOA
export JAVA_HOME=/usr/java/jdk1.6.0_17
```

Install Approach

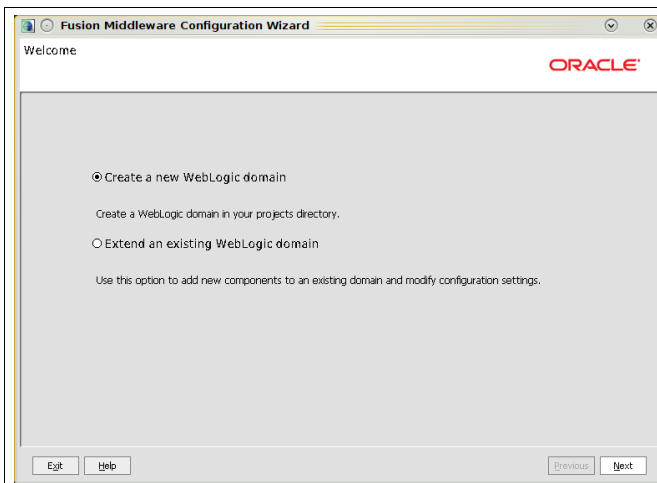
To install the SOA Cluster the following steps are executed.

- Configure Weblogic SOA cluster
 - Select Applications
 - Define servers
 - Define cluster
 - Define datasources
- Configure SOA Cluster specific settings
 - Define Object Cache
 - Create Distributed JMS Queues
 - Define Oracle Coherence settings
- Start and test SOA cluster

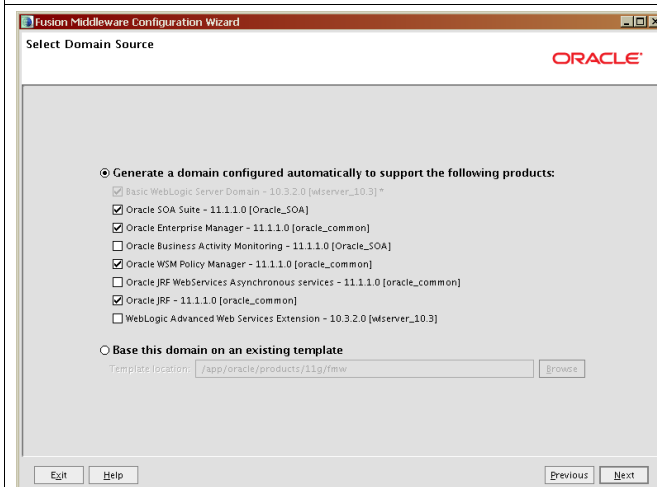
Configure SOA Domain

Start the SOA 11g configuration wizard.

```
cd $ORACLE_HOME/common/bin
export DISPLAY=:0.0
./config.sh
```



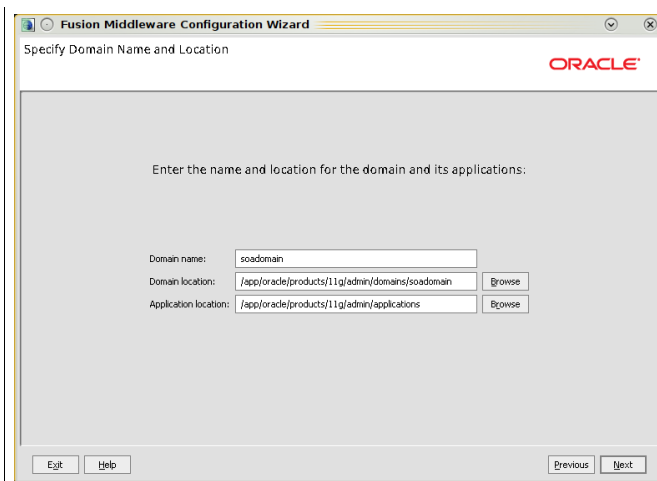
Click Next



Select

- SOA Suite
- Enterprise Manager
- WSM Policy manager
- JRF

Click Next



Fusion Middleware Configuration Wizard

Specify Domain Name and Location

Enter the name and location for the domain and its applications:

Domain name: soadomain

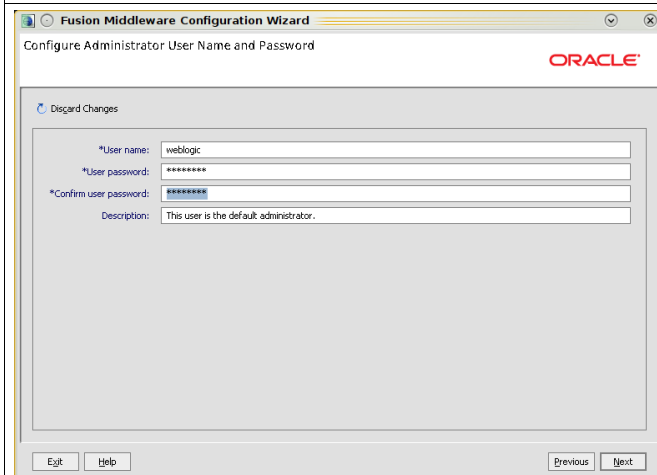
Domain location: /app/oracle/products/11g/admin/domains/soadomain

Application location: /app/oracle/products/11g/admin/applications

Buttons: Exit, Help, Previous, Next

Domain name: soadomain
Domain location:
/app/oracle/products/11g/admin/domains
Application location:
/app/oracle/products/11g/admin/applications

Click Next



Fusion Middleware Configuration Wizard

Configure Administrator User Name and Password

Discard Changes

*User name: weblogic

*User password: *****

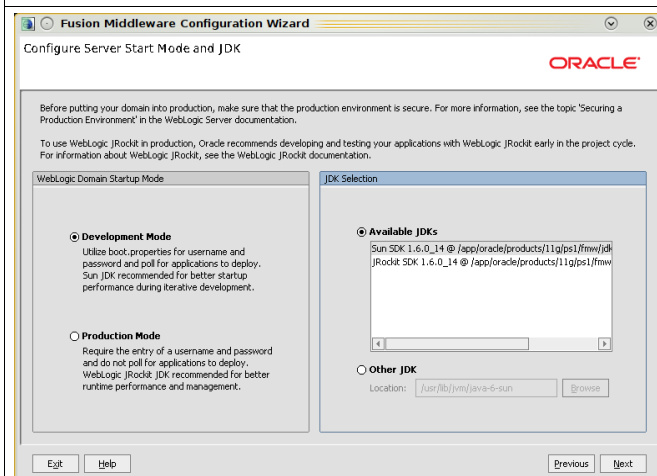
*Confirm user password: *****

Description: This user is the default administrator.

Buttons: Exit, Help, Previous, Next

User name: weblogic
User password: welcome1
Confirm password: welcome1

Click Next



Fusion Middleware Configuration Wizard

Configure Server Start Mode and JDK

Before putting your domain into production, make sure that the production environment is secure. For more information, see the topic "Securing a Production Environment" in the WebLogic Server documentation.

To use WebLogic JRockit in production, Oracle recommends developing and testing your applications with WebLogic JRockit early in the project cycle. For information about WebLogic JRockit, see the WebLogic JRockit documentation.

WebLogic Domain Startup Mode

☒ **Development Mode**
Utilize boot.properties for username and password and poll for applications to deploy.
Sun JDK recommended for better startup performance during iterative development.

☐ **Production Mode**
Require the entry of a username and password and do not poll for applications to deploy.
WebLogic JRockit recommended for better runtime performance and management.

JDK Selection

☒ **Available JDKs**

Sun SDK 1.6.0_14 @ /app/oracle/products/11g/ps1/jmm/jdk
JRockit SDK 1.6.0_14 @ /app/oracle/products/11g/ps1/jmm

☐ **Other JDK**
Location: /usr/lib/jvm/java-6-sun

Buttons: Exit, Help, Previous, Next

Choose your startup mode
Choose your type of JDK

Click Next

Note: Change only the input fields below that you wish to modify and values will be applied to all selected rows.

Vendor: Oracle DBMS/Service: XE
 Driver: *Oracle's Driver (Thin) for Service connections; Versions:9.0.1,9.2.0 Host Name: dbhost.example.com
 Schema Owner: Varies among component schemas Port: 1521
 Schema Password: *****
☐ Configure selected component schemas as RAC multi data source schemas in the next panel.

Component Schema	DBMS/Service	Host Name	Port	Schema Owner	Schema Password
<input checked="" type="checkbox"/> BAM Schema	XE	dbhost.example.com	1521	DEV_ORABAM	*****
<input checked="" type="checkbox"/> SOA Infrastructure	XE	dbhost.example.com	1521	DEV_SOAINFRA	*****
<input checked="" type="checkbox"/> User Messaging Service	XE	dbhost.example.com	1521	DEV_ORASDPM	*****
<input checked="" type="checkbox"/> OWSM MDS Schema	XE	dbhost.example.com	1521	DEV_MDS	*****
<input checked="" type="checkbox"/> SOA MDS Schema	XE	dbhost.example.com	1521	DEV_MDS	*****

Choose the correct schema names and password for the database schemas.

Click Next

Note: if RAC is used, check the 'RAC Datasources checkbox'

Note: Change only the input fields below that you wish to modify and values will be applied to all selected rows.

Driver: *Oracle's Driver (Thin) for RAC Service-Instance connect Host Name Instance Name Port
 Service Name: Enter a value
 Username: Varies among component schemas
 Password: *****

Multi Data Source Schema	Service Name	Schema Owner	Schema Password
<input checked="" type="checkbox"/> BAM Schema		DEV_ORABAM	*****
<input checked="" type="checkbox"/> SOA Infrastructure		DEV_SOAINFRA	*****
<input checked="" type="checkbox"/> User Messaging Service		DEV_ORASDPM	*****
<input checked="" type="checkbox"/> OWSM MDS Schema		DEV_MDS	*****
<input checked="" type="checkbox"/> SOA MDS Schema		DEV_MDS	*****

The RAC data sources configuration screen

Status **Component Schema** **JDBC Connection URL**

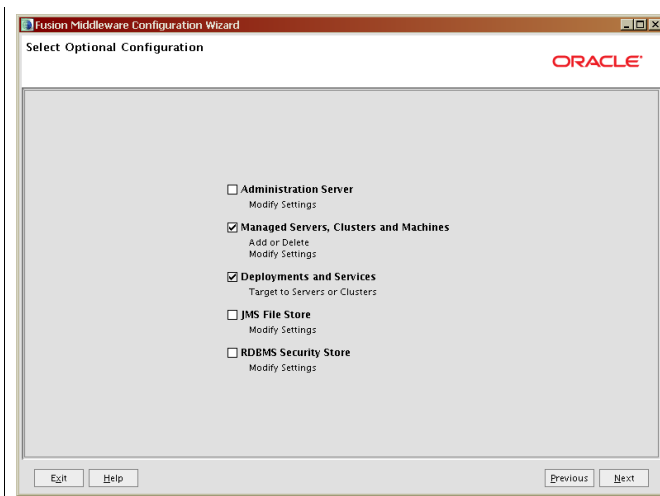
<input checked="" type="checkbox"/>	BAM Schema	jdbc:oracle:thin:@localhost:1521/XE
<input checked="" type="checkbox"/>	SOA Infrastructure	jdbc:oracle:thin:@localhost:1521/XE
<input checked="" type="checkbox"/>	User Messaging Service	jdbc:oracle:thin:@localhost:1521/XE
<input checked="" type="checkbox"/>	OWSM MDS Schema	jdbc:oracle:thin:@localhost:1521/XE
<input checked="" type="checkbox"/>	SOA MDS Schema	jdbc:oracle:thin:@localhost:1521/XE

Select All Unselect All Test Connections

Connection Result Log
 Component Schema=SOA MDS Schema
 Driver=oracle.jdbc.OracleDriver
 URL=jdbc:oracle:thin:@localhost:1521/XE
 User=DEV_MDS
 Password=*****
 SQL Test=select 1 from schema_version_registry where owner=(select user from dual) and nr_type='MDS' and version='11.1.1.2.0'
 CFGPWK-20850: Test Successful

Verification of the database connections. If this is failing, apply the correct settings.

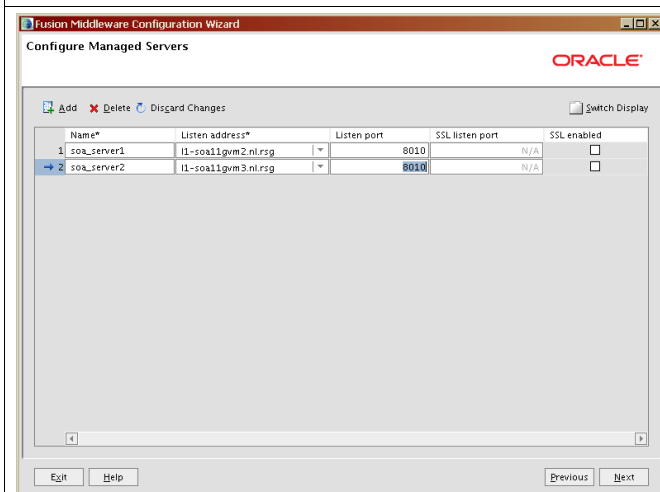
Click Next



Check:

Managed Servers, Clusters and Machines
Deployments and Services

Click Next

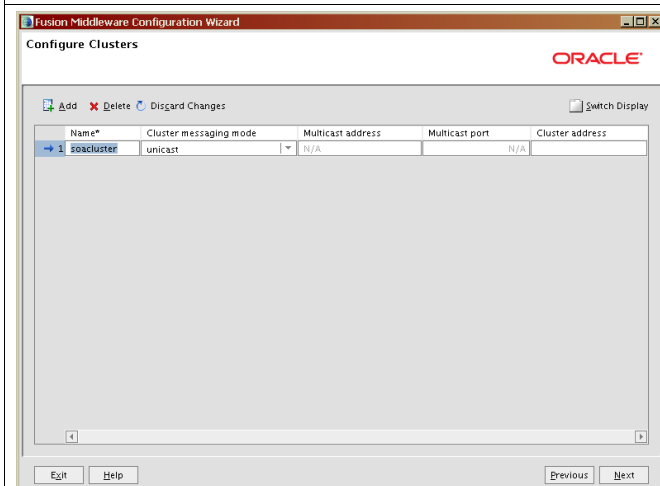


Verify that there are two servers for SOA.

Name: soa_server1
Listen: node1.vijfhuizen.com
Port: 8010

Name: soa_server2
Listen: node1.vijfhuizen.com
Port: 8010

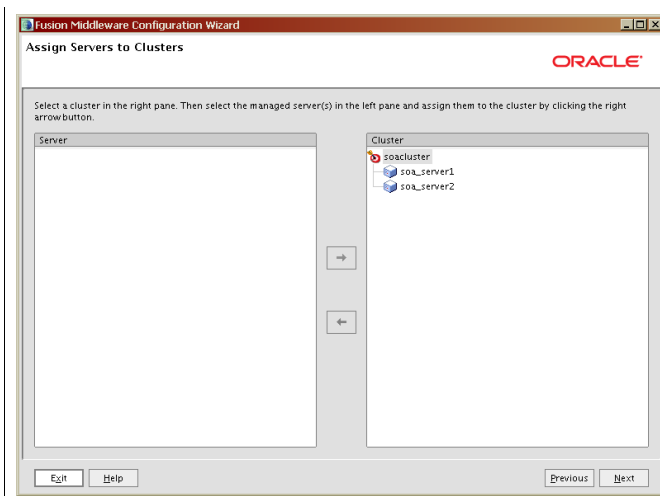
Click Next



Name: soacluster

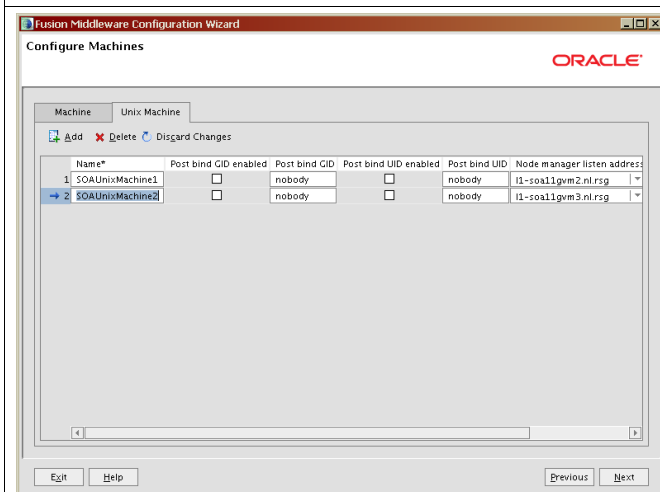
Click Next

Note: You could create a second clusters, for example, bam_cluster to seperate soa & bam.



Add all the servers to the cluster

Click Next

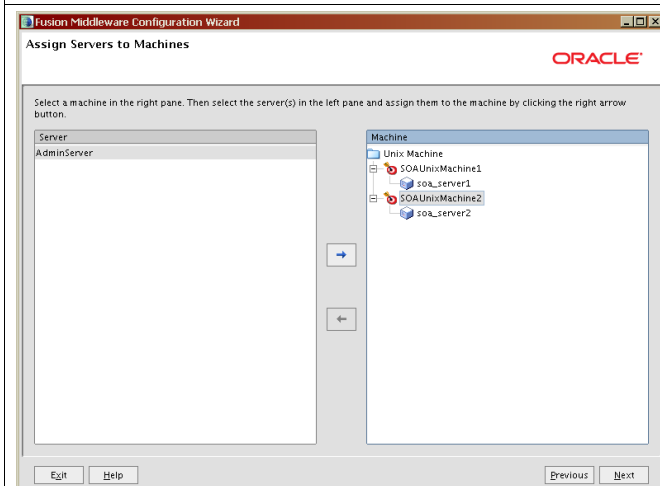


Remove default machine

Add all the machines that are needed in the cluster when they are maintained with node manager.

SOAUnixMachine1 | node1.vijfhuizen.com
SOAUnixMachine2 | node1.vijfhuizen.com

Click Next

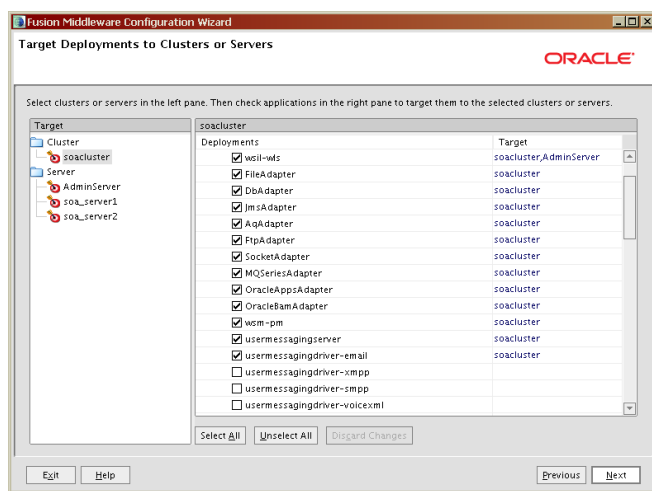


Add the servers to the machines.

Machine 1
- soa_server1

Machine 2
- soa_server2

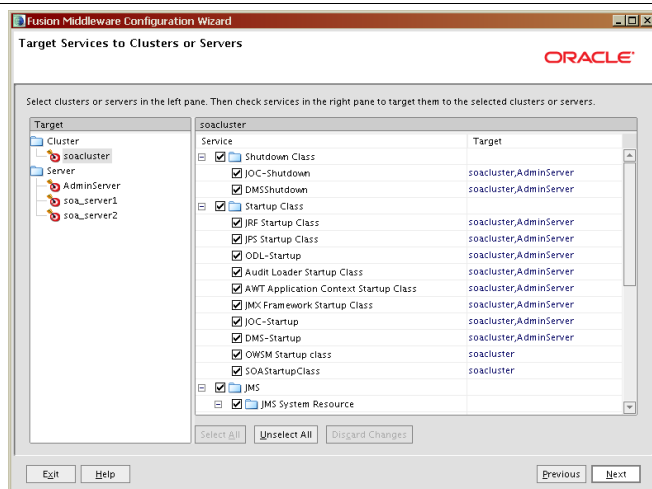
Click Next



This is the tricky part.

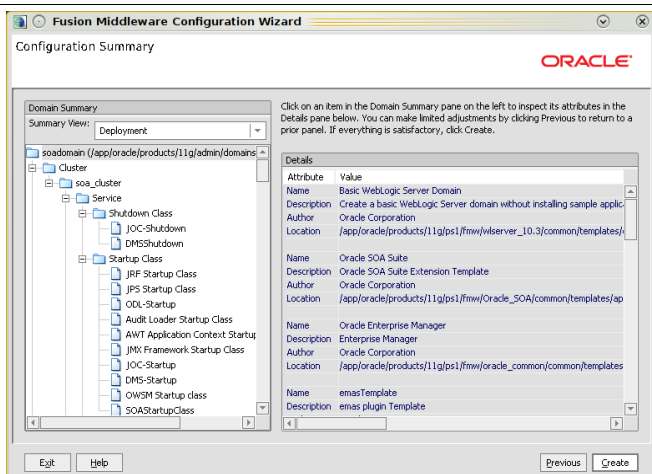
Make sure that the correct applications and libraries are targeted to the correct cluster.

Click Next



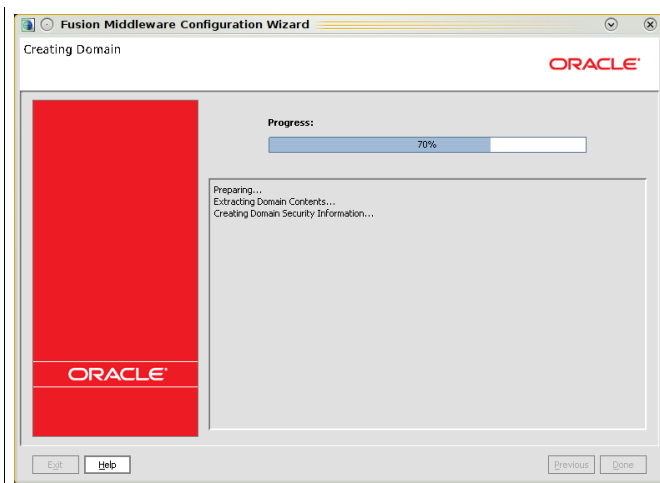
All the libraries targeted to cluster

Click Next

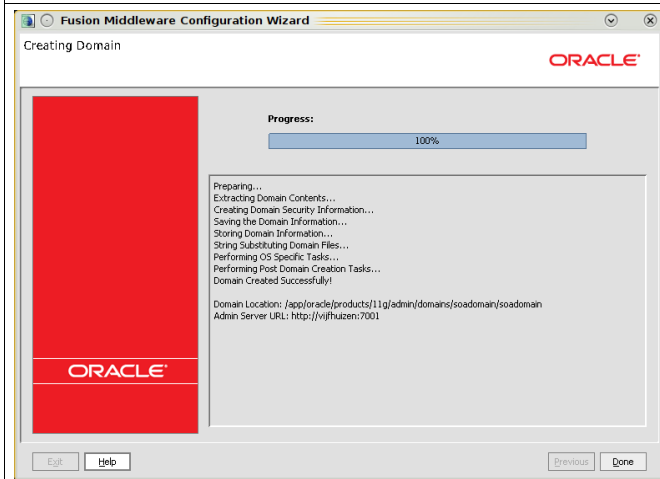


Summary Screen

Click Create



Creation in progress...



Click Done

Now we have created a 'soadomain' with a 'soacluster', the configuration should be copied to the other server. Use the pack and unpack commands to separate the domain directory used by the Administration Server from the domain directory used by the managed server in the other node.

Execute the pack command on node #1 to create a pack file with the domain definition.

```
cd $WLS_SERVER/common/bin
./pack.sh -managed=true -domain=$SOA_DOMAIN -template=soadomaintemplate.jar -
template_name=soa_domain_template
<< read domain from "/app/oracle/products/11g/admin/domains/soadomain"
>> succeed: read domain from "/app/oracle/products/11g/admin/domains/soadomain"
<< set config option Managed to "true"
>> succeed: set config option Managed to "true"
<< write template to
"/app/oracle/products/11g/ps1/fmw/wlserver_10.3/common/bin/soadomaintemplate.jar"
.....
>> succeed: write template to
```

```
"/app/oracle/products/11g/ps1/fmw/wlserver_10.3/common/bin/soadomaintemplate.jar"
<< close template
>> succeed: close template
```

Copy the “” file to the other the second node. Run the unpack command on node #2 to unpack the template in the managed server domain directory as follows:

```
cd $WLS_SERVER/common/bin

scp oracle@node2.vijfhuizen.com: $WLS_SERVER/common/bin/soadomaintemplate.jar .
oracle@ node2.vijfhuizen.com's password: *****
soadomaintemplate.jar                               100% 1163KB   1.1MB/s   00:00

./unpack.sh -domain=$SOA_DOMAIN -template=soadomaintemplate.jar
<< read template from
"/app/oracle/products/11g/fmw/wlserver_10.3/common/bin/soadomaintemplate.jar"
>> succeed: read template from
"/app/oracle/products/11g/fmw/wlserver_10.3/common/bin/soadomaintemplate.jar"
<< set config option DomainName to "soadomain"
>> succeed: set config option DomainName to "soadomain"
<< write Domain to "/app/oracle/products/11g/admin/domains/soadomain"
.....
.....
>> succeed: write Domain to "/app/oracle/products/11g/admin/domains/soadomain"
<< close template
>> succeed: close template
```

On each server, create the boot properties to start the admin server that will create the managed server based on our configuration.

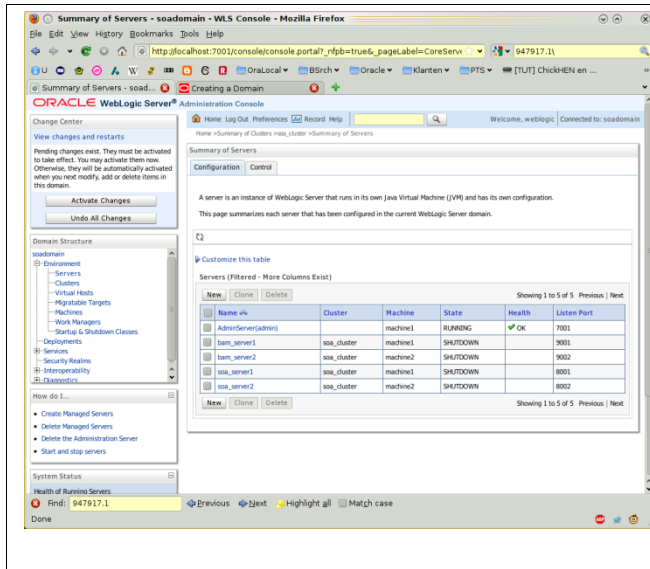
```
cd $SOA_DOMAIN
vi boot.properties
username=weblogic
passssword=welcome1

mkdir -p servers/AdminServer/security
cp boot.properties servers/AdminServer/security
```

Start the Admin Server in a new session on node #1 only.

```
cd $SOA_DOMAIN/bin
. ./startWeblogic.sh
```

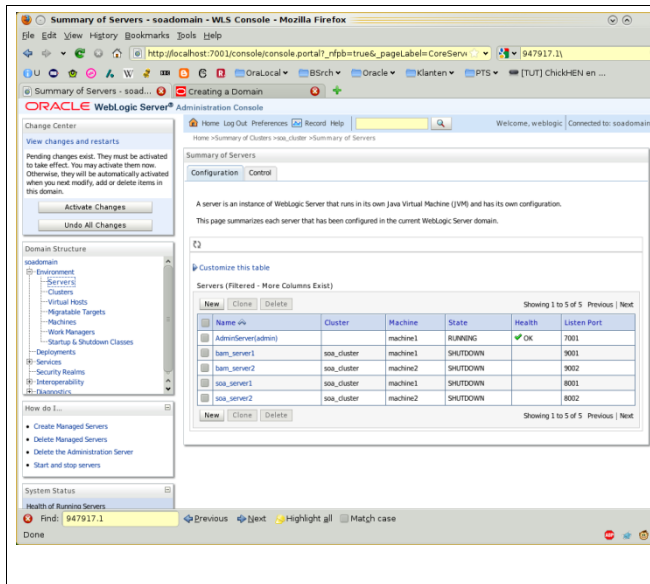
Logon to the Admin Server and verify that the managed servers are listed and assigned to a domain.



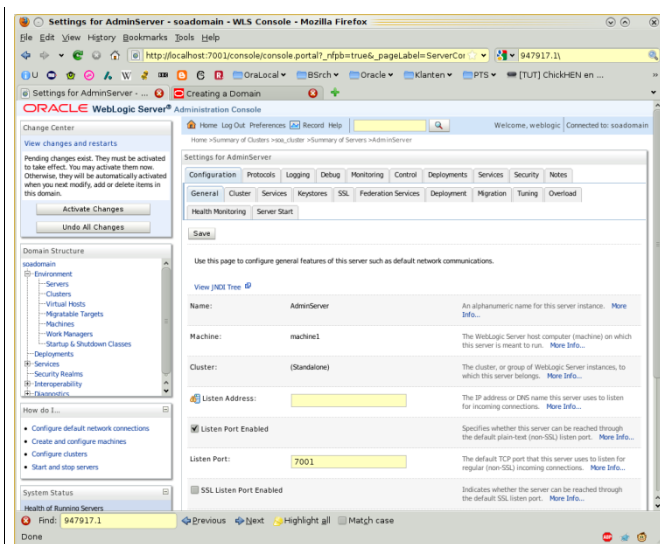
<http://node1.vijfhuizen.com:7001/em>

Logon as: weblogic / welcome1
Click on Environment
Click on servers

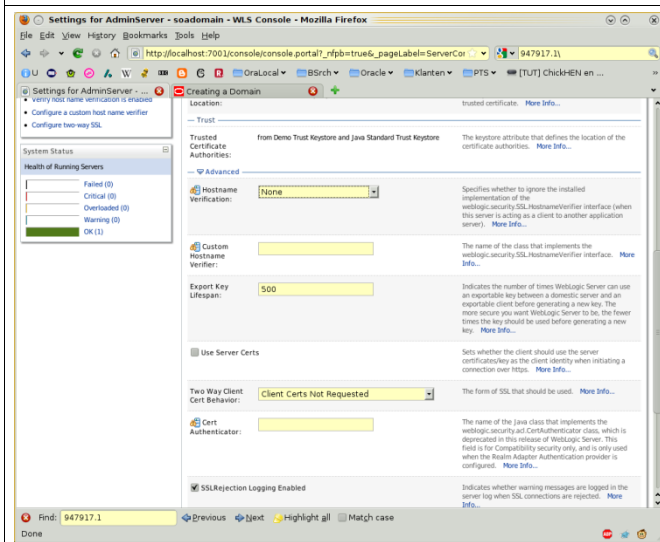
Disable hostname verification



Logon the the Admin console and click on Environment → Servers



Select Admin Server



Select SSL tab sheet
Click on Advanced
Set hostname verification to None
Click on Save

Repeat these steps for all the servers

soa_server1
soa_server2

Restart the admin server to apply these settings, see Appendix.

On each server, start the Node managers, to create the initial property file. Stop the node manager after it has been started.

```
cd $WLS_SERVER/server/bin
./startNodeManager.sh
...
<Feb 16, 2010 3:06:51 PM> <INFO> <Secure socket listener started on port 5,556>
Feb 16, 2010 3:06:51 PM weblogic.nodemanager.server.SSLListener run
INFO: Secure socket listener started on port 5,556
<Control-C>
```


Edit the node manager configuration to enable the stop and start via scripts.

```
cd $WLS_SERVER/common/nodemanager
vi nodemanager.properties
...
StartScriptEnabled=true
...
StopScriptEnabled=true
...
```

This will enable the nodemanager to use the O/S specific start and stop via the scripts.

Start the node managers on each server, see appendix.

Java Object Cache

Enable the Java Object Cache on the cluster.

Start the Admin Server, see Appendix.

```
cd $WLS_HOME/oracle_common/common/bin
./wlst.sh

wls:/offline> connect()
Please enter your username [weblogic] : <enter>
Please enter your password [welcome1] : <enter>
Please enter your server URL [t3://localhost:7001] :
Connecting to t3://localhost:7001 with userid weblogic ...
Successfully connected to Admin Server 'AdminServer' that belongs to domain 'soadomain'.

Warning: An insecure protocol was used to connect to the
server. To ensure on-the-wire security, the SSL port or
Admin port should be used instead.

wls:/soadomain/serverConfig> execfile('/app/oracle/products/11g/fmw/oracle_common/bin/configure-
joc.py')

Enter Hostnames (eg host1,host2) : node1.vijfhuizen.com,node2.vijfhuizen.com

Do you want to specify a cluster name (y/n) <y>

Enter Cluster Name : soacluster

Enter Discover Port : 9991

Enter Distribute Mode (true|false) <true> : <enter>

Do you want to exclude any server(s) from JOC configuration (y/n) <n>
*** Cluster option is specified, JOC will be configured for all the Managed Server in the Cluster
soacluster at the port 9991
drw- AdminServer
drw- soa_server1
drw- soa_server2
drw- soa_server2

Servers for Cluster :- soa_cluster is :- bam_server1,bam_server2,soa_server1,soa_server2,
[bam_server1, bam_server2, soa_server1, soa_server2]
[node1.vijfhuizen.com, node2.vijfhuizen.com]

Configuring JOC for server :- bam_server1
Location changed to domain custom tree. This is a writable tree with No root.
```

For more help, use `help(domainCustom)`

```
-r-- ConfigMBean true
-rw- DiscoverList java.lang.String[node1.vijfhuizen.com,
node2.vijfhuizen.com]
-rw- DiscoverPort 9991
-rw- DistributeMode true
...
exit()
```

Configuring Oracle Coherence for Deploying Composites

The following settings will disable the default Coherence behavior of multi broadcast. We specify specific nodes that are used for SOA cluster deployment (see <http://wiki.tangosol.com/dashboard.action>).

On node #1, add in the startWebLogic.sh

```
cd $SOA_DOMAIN/bin
vi startWeblogic.sh

# Call setDomainEnv here.

EXTRA_JAVA_PROPERTIES="-Dtangosol.coherence.wka1=node1.vijfhuizen.com -
Dtangosol.coherence.wka2=node2.vijfhuizen.com -Dtangosol.coherence.localhost=node1.vijfhuizen.com"

DOMAIN_HOME="/app/oracle/products/11g/admin/domains/soadomain"
```

On node #2, add in the startWebLogic.sh

```
cd $SOA_DOMAIN/bin
vi startWeblogic.sh

# Call setDomainEnv here.

EXTRA_JAVA_PROPERTIES="-Dtangosol.coherence.wka1=node2.vijfhuizen.com -
Dtangosol.coherence.wka2=node1.vijfhuizen.com -Dtangosol.coherence.localhost=node2.vijfhuizen.com"

DOMAIN_HOME="/app/oracle/products/11g/admin/domains/soadomain"
```

Configure the distributed JMS Queues.

```
cd $SOA_DOMAIN/bin
. setDomainEnv.sh
*****
** Setting up SOA specific environment...
*****
EXTRA_JAVA_PROPERTIES= -da:org.apache.xmlbeans...
...
*****
** End SOA specific environment setup
*****
```

```
$JAVA_HOME/bin/java weblogic.WLST $ORACLE_HOME/bin/soa-createUDD.py --domain_home $SOA_DOMAIN --
soacluster soacluster

Initializing WebLogic Scripting Tool (WLST) ...

Welcome to WebLogic Server Administration Scripting Shell

Type help() for help on available commands

Domain Home: /app/oracle/products/11g/admin/domains/soadomain/soadomain
SOA Cluster : soa_cluster
```

```
BAM Cluster :
Track : soa

***Deleting SOA JMS Module ***

***Creating Uniform Distributed Destination for SOA***

*** Setting Target for JMS Module***
*** Creating JMS SubModule for SOA JMS Servers***
...

searchClusterStr = soa_cluster:
clusterNameStr = Proxy for soa_cluster: Name=soa_cluster, Type=Cluster
UMS JMS Servers for Cluster :- soa_cluster is :-
UMSJMServer_auto_1,UMSJMServer_auto_2,UMSJMServer_auto_3,UMSJMServer_auto_4,
...

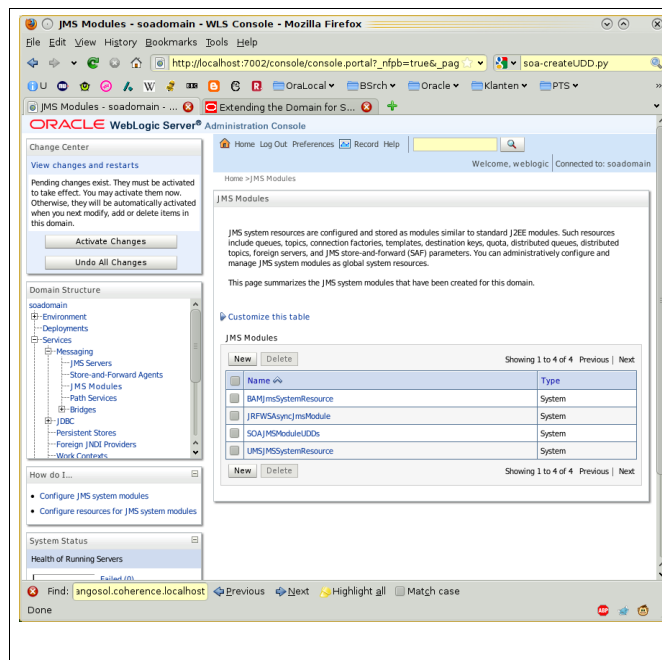
*** Creating Connection Factories for UMS ***
*** Enabling XA ***

*** Saving the domain ***
```

Restart the Admin server (see appendix)

Check if the following modules are listed in the console:

- SOAJMSModuleUDDs
- UMSJMSSystemResource



Logon to the WLS console
Expand the services
Select JMS Modules

Start the SOA Managed Servers, see appendix.

The cluster should be up and running.

Verify for each node if the following URL's are working.

<http://node1.vijfhuizen.com:8010/soa-infra>
<http://node1.vijfhuizen.com:8010/b2bconsole>
<http://node1.vijfhuizen.com:8010/integration/worklistapp>
<http://node2.vijfhuizen.com:8010/soa-infra>
<http://node2.vijfhuizen.com:8010/b2bconsole>
<http://node2.vijfhuizen.com:8010/integration/worklistapp>

Check in enterprise manager that the whole SOA Infra is up and running.

<http://node1.vijfhuizen.com:7001/em>

'Fake' Load Balancer.

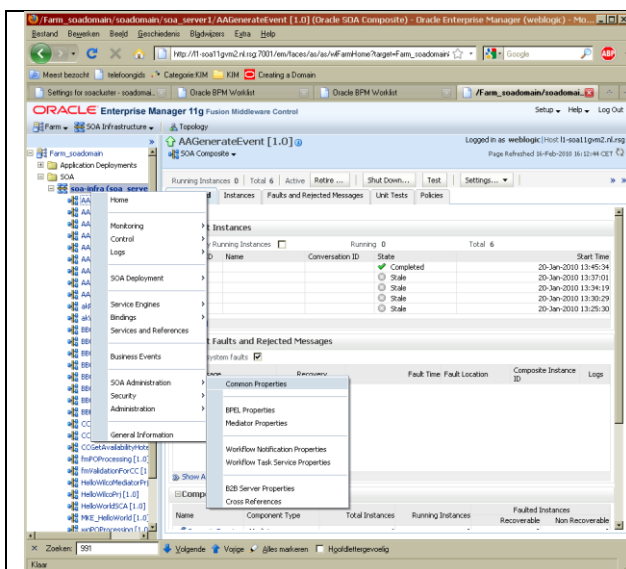
In case no load balancer is used. We can use the following approach. In each server and on the workstation the file hosts is edited. The following line is added:

```
vi /etc/hosts
Notepad C:\windows\system32\drivers\etc\hosts

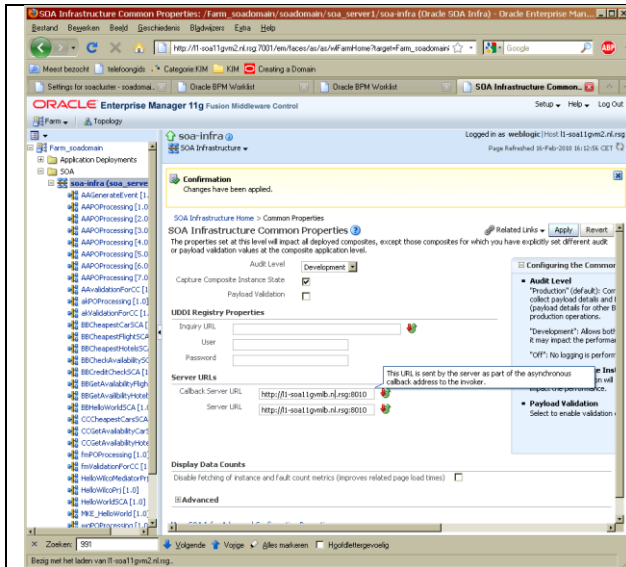
10.10.10.10      loadbalancer.vijfhuizen.com
```

In the console of the enterprise manager, the SOA common properties are changed for the SOAP Url and Callback URL to:

<http://loadbalancer.vijfhuizen.com:8010>



Farm_soadomain
 SOA
 Right-mouse on 'soa-infra'
 SOA Administration
 Common Properties



Change the two URLs:

Callback Server:

<http://loadbalancer.vijfhuizen.com:8010>

Server:

<http://loadbalancer.vijfhuizen.com:8010>

Click on Apply

Appendix: Servers start stop

Stop Admin Server

In a new session:

```
$SOA_DOMAIN/bin/stopWebLogic.sh
```

Start Admin Server

In a new session:

```
$SOA_DOMAIN/bin/startWebLogic.sh
```

Or, unattended:

```
nohup $SOA_DOMAIN/bin/startWebLogic.sh &
```

Start NodeManager

```
cd $WLS_SERVER/server/bin
./startNodeManager.sh
...
<Jan 13, 2010 3:14:19 PM> <INFO> <Secure socket listener started on port 5,556>
Jan 13, 2010 3:14:19 PM weblogic.nodemanager.server.SSLListener run
INFO: Secure socket listener started on port 5,556
```

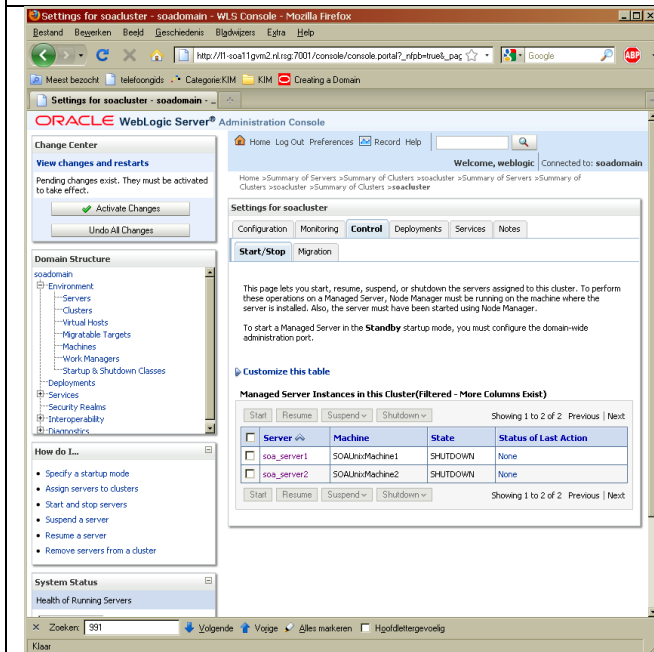
Or unattended:

```
cd $WLS_SERVER/server/bin
nohup ./startNodeManager.sh &
```

Start the SOA Managed Servers

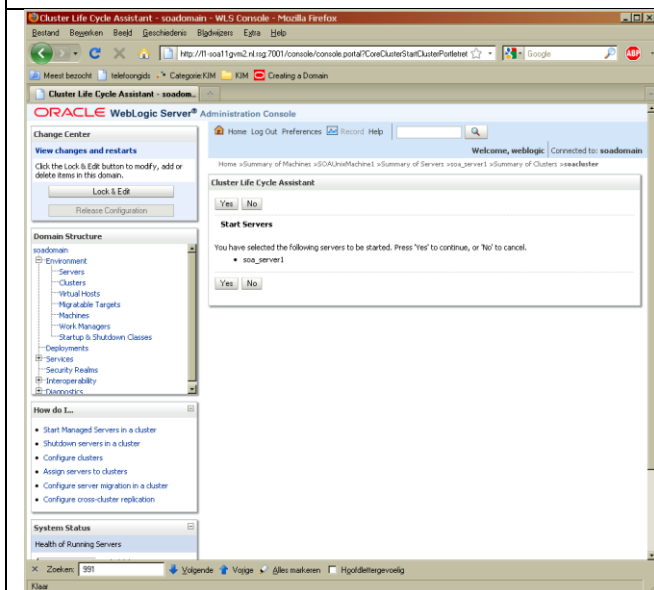
The managed servers are started through the WLS Console:

```
Logon the console.  
Click on Clusters.  
Click on soacluster  
Click in Control
```



```
Select soa_server1 or soa_server2
```

Click on start



Select Yes

Stop the SOA Managed Servers

The managed servers are stopped through the WLS Console:

Settings for soacluster - soadomain - WLS Console - Mozilla Firefox

Bestand Bewerken Beeld Geschiedenis Bijlagen Etra Help

http://11-104-11-gm2.nl.rg.7001/console/console.portal?_afpb=ua&_pag= Google

Meest bezocht telecongrds Categorie:KIM KIM Creating a Domain

Settings for soacluster - soadomain

ORACLE WebLogic Server Administration Console

Change Center

View changes and restarts

Pending changes exist. They must be activated to take effect.

Activate Changes

Undo All Changes

Domain Structure

soadomain

- Environment
 - Servers
 - Clusters
 - Virtual Hosts
 - Migratable Targets
 - Machines
 - Work Managers
 - Startup & Shutdown Classes
 - Deployments
 - Services
 - Security Realms
 - Interoperability
 - Diagnostics

How do I...?

- Specify a startup mode
- Assign servers to clusters
- Start and stop servers
- Suspend a server
- Resume a server
- Remove servers from a cluster

System Status

Health of Running Servers

3/1 Volgende

Logon the console.
Click on Clusters.
Click on soacluster
Click in Control

Welcome, weblogic Connected to: soadomain

Home » Summary of Servers » Summary of Clusters » soacluster » Summary of Servers » Summary of Clusters » soacluster » Summary of Clusters » soacluster

Settings for soacluster

Configuration Monitoring Control Deployments Services Notes

Start/Stop Migration

The page lets you start, resume, suspend, or shutdown the servers assigned to the cluster. To perform these operations on a Managed Server, Node Manager must be running on the node where the server is installed. Also, the server must have been started using Node Manager.

To start a Managed Server in the Standby startup mode, you must configure the domain-wide administration port.

Customize this table

Managed Server Instances in this Cluster (Filtered - More Columns Exist)

Start Resume Suspend Shutdown Showing 1 to 2 of 2 Previous Next

Server	Machine	State	Status of Last Action
soa_server1	SOAInfraMachine1	SHUTDOWN	None
soa_server2	SOAInfraMachine2	SHUTDOWN	None

Start Resume Suspend Shutdown Showing 1 to 2 of 2 Previous Next

Select soa_server1 or soa_server2

Click on Shutdown (Force)