ORACLE

DATABASE APPLIANCE

March 2013

How to Configure and Deploy Oracle WebLogic Server on Oracle Database Appliance

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Executive Overview

This document provides the detailed instruction on setting up WebLogic VM domain on Oracle Database Appliance. It includes the details on how to set up WebLogic domain, how to configure the services, including data sources and JMS destinations. Oracle Traffic Director is included to serve the purpose of software load balancer that provides the HA functionality with active-passive configuration with HA VIP.

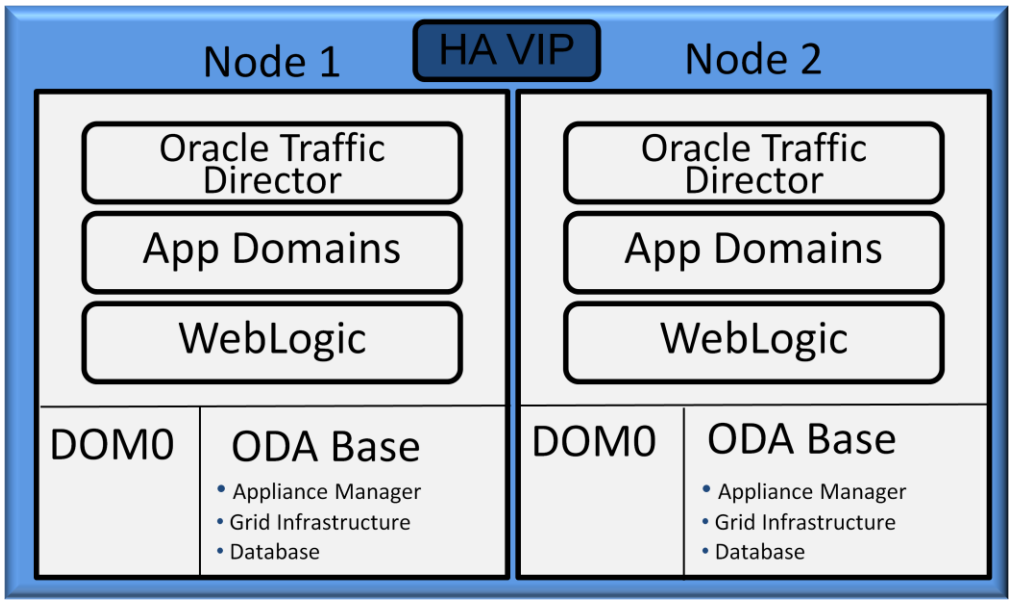
The sample of two-node WebLogic cluster is used in this exercise. The sample application post provisioning deployment is also included.

Introduction

With the latest offering of adding WebLogic on Oracle Database Appliance, the following functionalities are included:

1. Highly available WebLogic Server with 2, 4 or 8 nodes cluster options that provide the foundation for the customers to build and deploy enterprise Java EE applications with support for new features in 11g (10.3.6) and 12c (12.1.1).
2. High availability of the load balancing services with Oracle Traffic Director, with the capability of grouping pairs of Oracle Traffic Director instances for active-passive failover. With the software load balancer, the reliable entry point for all HTTP and HTTPS traffic to WebLogic Server in the customer network can be deployed.
3. Simple, Reliable, Affordable platform for deploying end-to-end solutions leveraging not only Oracle Database RAC, but also WebLogic and Oracle Traffic Director to provide the environment for the customers' mission critical investment.

The following scenario has been used for this howto with a two-node WebLogic cluster setting.



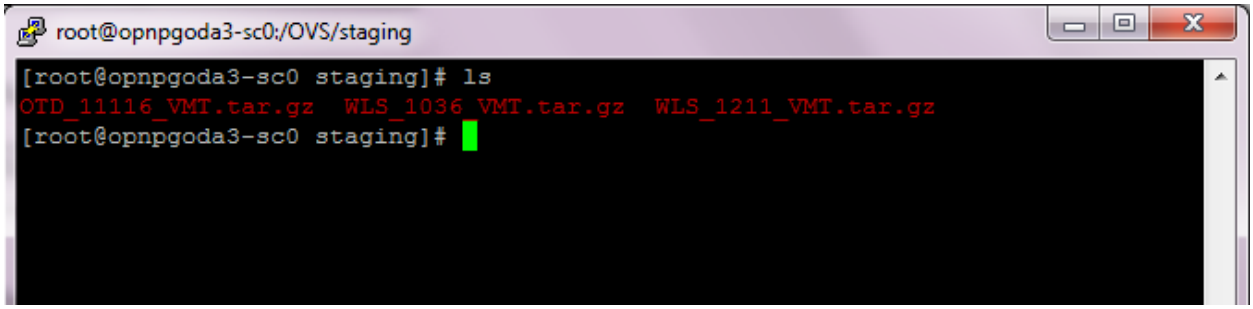
Get Started

The WebLogic Server and Oracle Traffic Director VM templates can be downloaded from MOS or eDelivery.

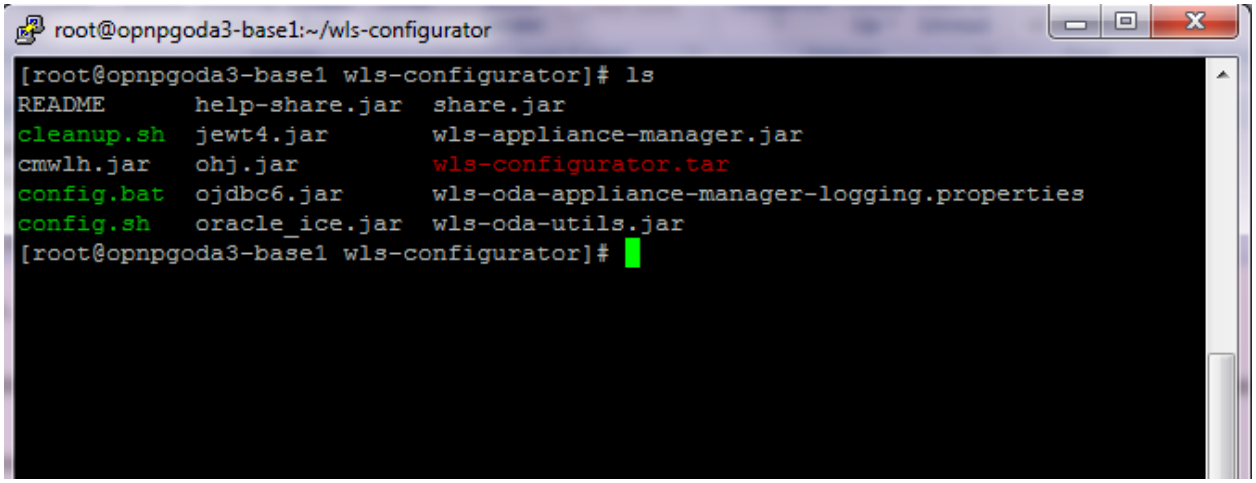
For this howto exercise, the VM templates have been loaded to the ODA boxes already.

The WebLgoic Server configuration for Oracle Database Appliance package is packaged as a separate zip file.

The VM template and configuration files are downloaded into Dom0 as shown following:



The WebLogic Server Configuration for Oracle Database Appliance can be downloaded into Dom1 as shown below:



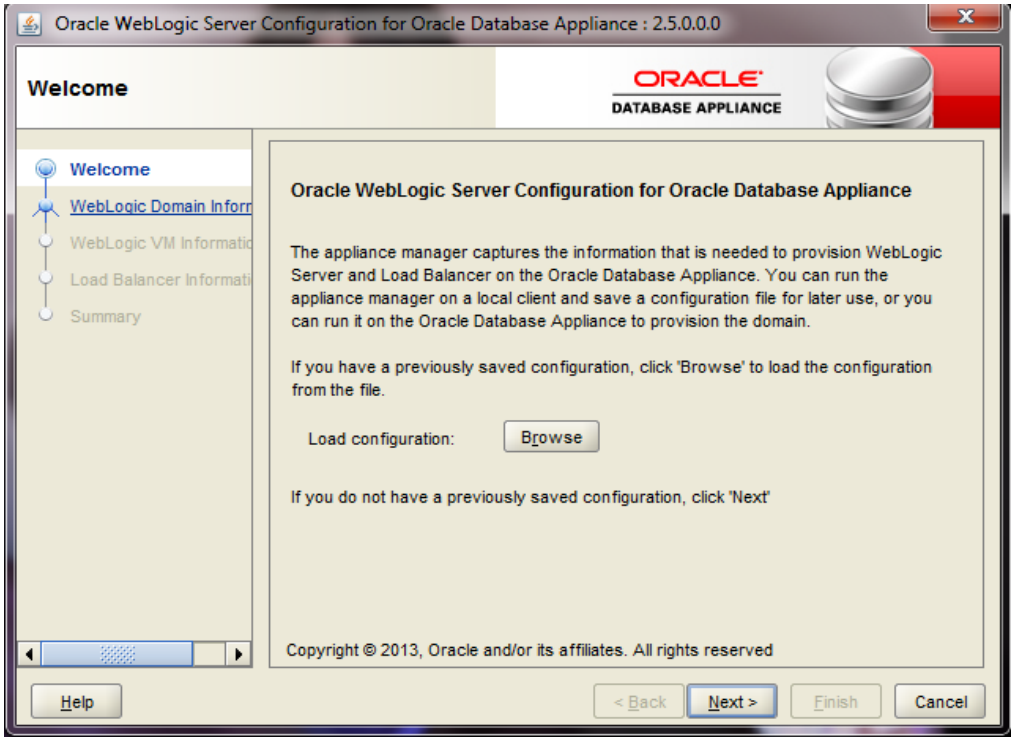
Provision WebLogic Server, OTD Domains and Configure WebLogic Server Services

Here are the steps to provision WebLogic Server and OTD domains, as well as configure the WebLogic services such as Data Sources and JMS:

Welcome Page

The appliance manager captures the information that is needed to provision WebLogic Server and Load Balancer on the Oracle Database Appliance. The appliance manager can be run on a local client and save a configuration file for later use, or it can be run on the Oracle Database Appliance to provision the domains.

Also if an existing configuration file already been saved, it can be loaded to the provision system as well.

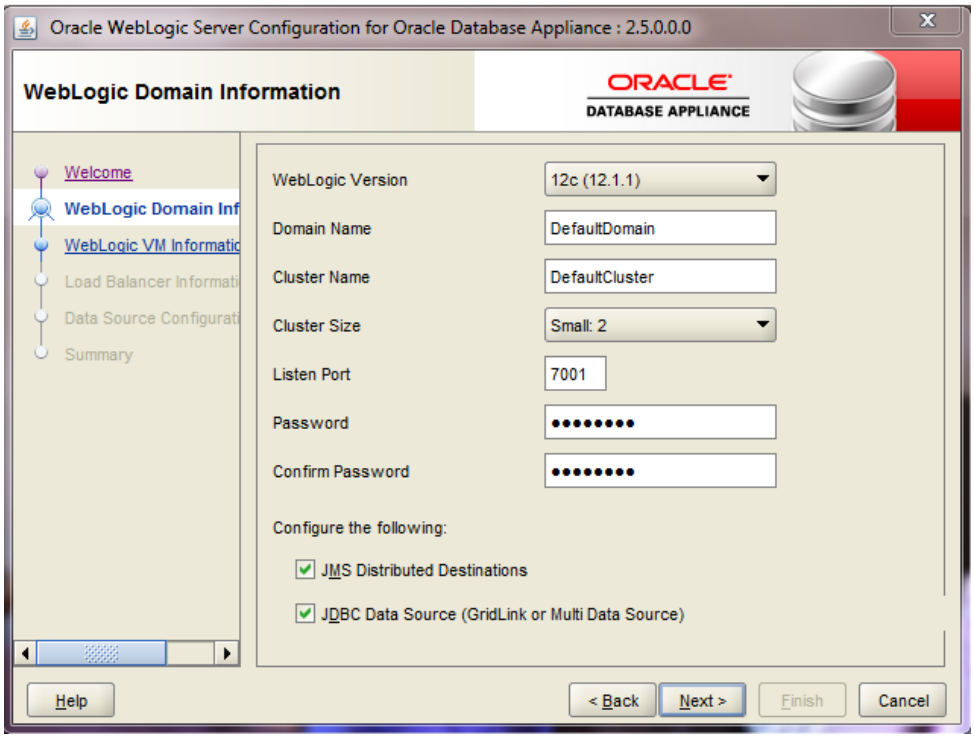


Set up WebLogic domain and cluster

The WebLogic Server domain and cluster can be configured with the configurator. There are two options of WebLogic version are supported, ie 11g (10.3.6) and 12c (12.1.1).

Options of cluster size are supported with 2 nodes, 4 nodes for 8 nodes cluster.

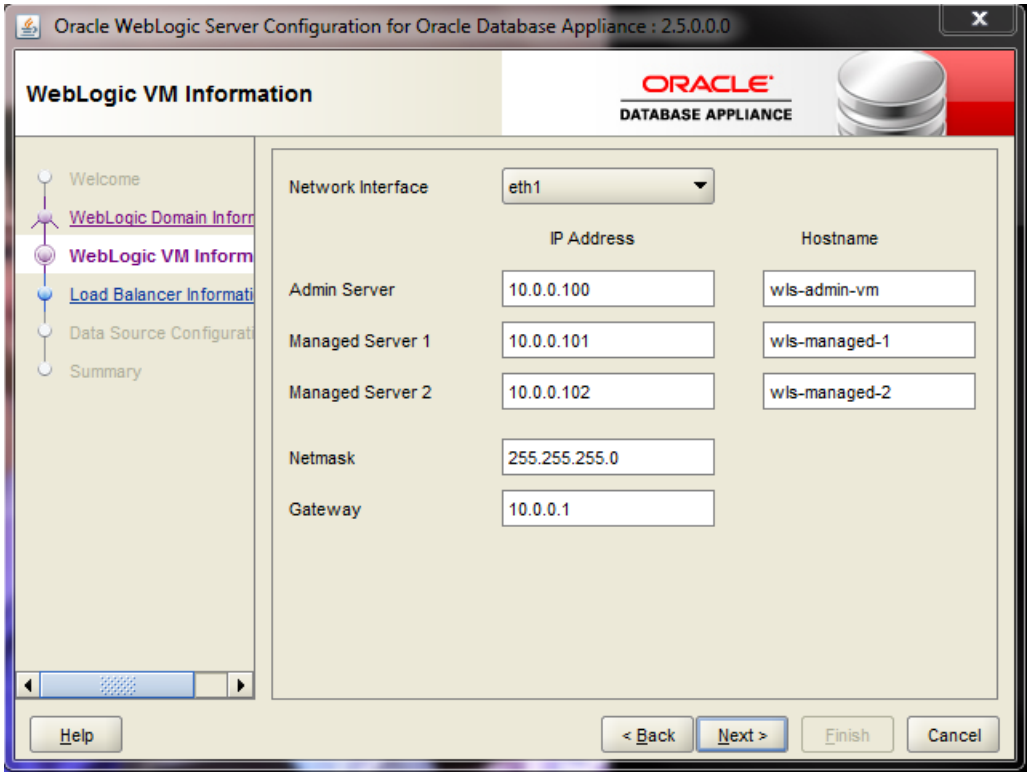
The JMS setting and Data Source configuration can be selected at this step, so the simple configuration can be taken care of in the automated process. If not selected, they can be configured post provisioning as well.



WebLogic VM Networking setting

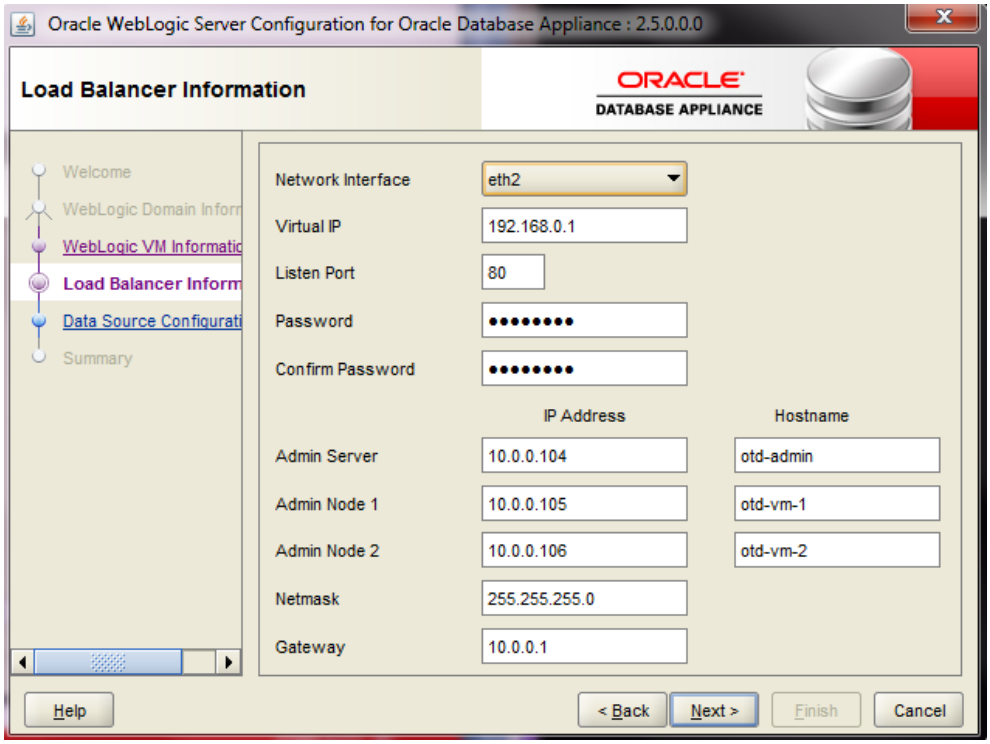
There are two external network interfaces are available, ie eth1 and eth2 that are shared between Database, WebLogic and OTD.

For the example here, two WebLogic managed servers are configured with two different ip addresses. And the Admin Server also is configured with an ip address.

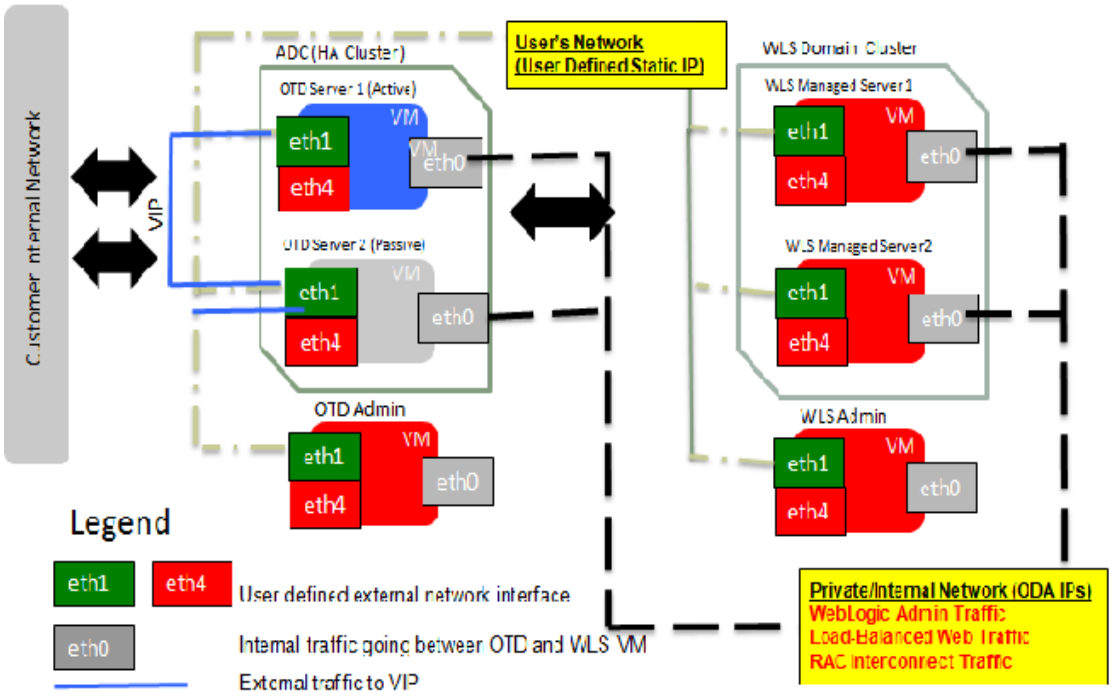


Oracle Traffie Director Load Balancing configuration

For OTD configuration, one of the external network interfaces can be used for OTD VIP. The real IP address is listening to one of the two external network interfaces. The virtual interface then bound to the real IP which allows the requests to be failed over to the 1st and 2nd OTD instances. Two OTD server instances are set up with two different ip addresses.



To network topology with two nodes Weblogic cluster would look like following:



The green and red are representing two external user defined network interfaces. The gray represents to internal traffic going between OTD and WebLogic VMs. The blue represents to the external traffic to OTD VIP.

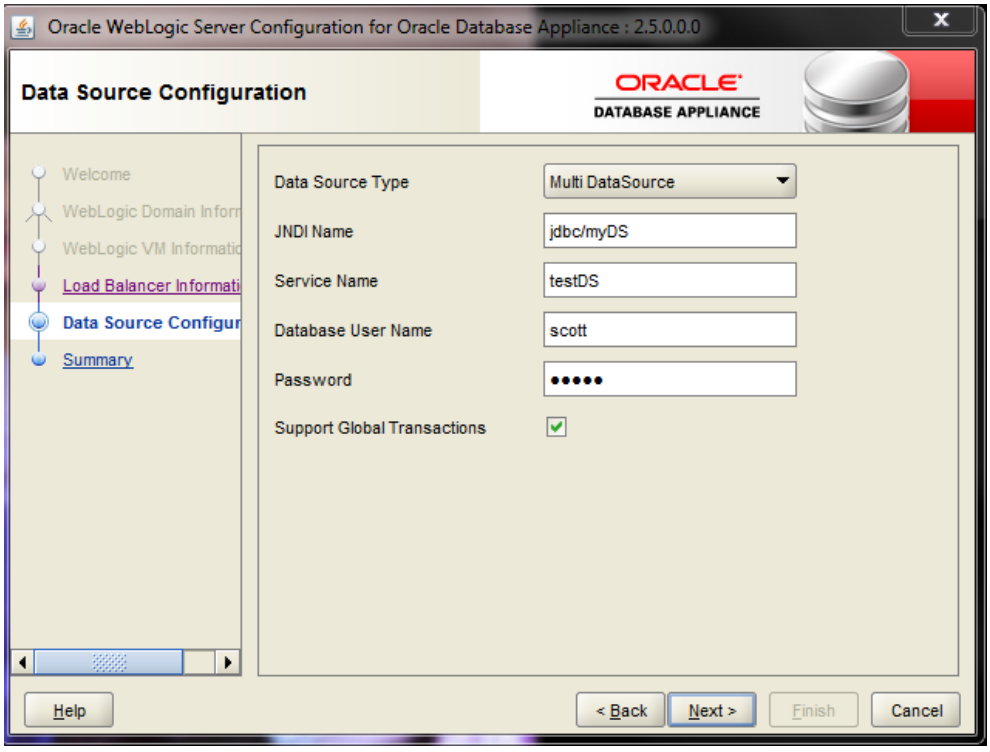
The external traffic can either route to directly to different VMs, ie WebLogic or OTD; or it can be route to OTD via HA VIP for failover and load balancing support.

WebLogic Data Source configuration

The data sources can be configured in this wizard driven provisioning process. All three options of data sources are supported, i.e., GridLink Data Source for connecting to RAC cluster or RAC One Node system; the Multi Data Source for connecting RAC cluster; and generic data source for connecting to the single Database instance. All three database options are supported on Oracle Database Appliance with Database Enterprise Edition and Grid Infrastruction.

As the default, the GridLink Data Source is configured for WebLogic JMS persistence and TLOG storage. This is built with a separate database for internal usage only.

After the provisioning process, the additional configurations and tuning can be done via WebLgoic Admin Console or other management tools.



Summary of the configuration and kick off the provisioning process

After running through the WebLogic Configuration for Oracle Database Appliance, it's ready to kick off the provisioning process. Then the WebLogic and OTD instances and Admin servers will be set up in each VM.

The configuration value added during the configuration steps can be saved in a property file for future provisioning use. For example, sample.property .

Generally the provisioning process takes less than 120 minutes.

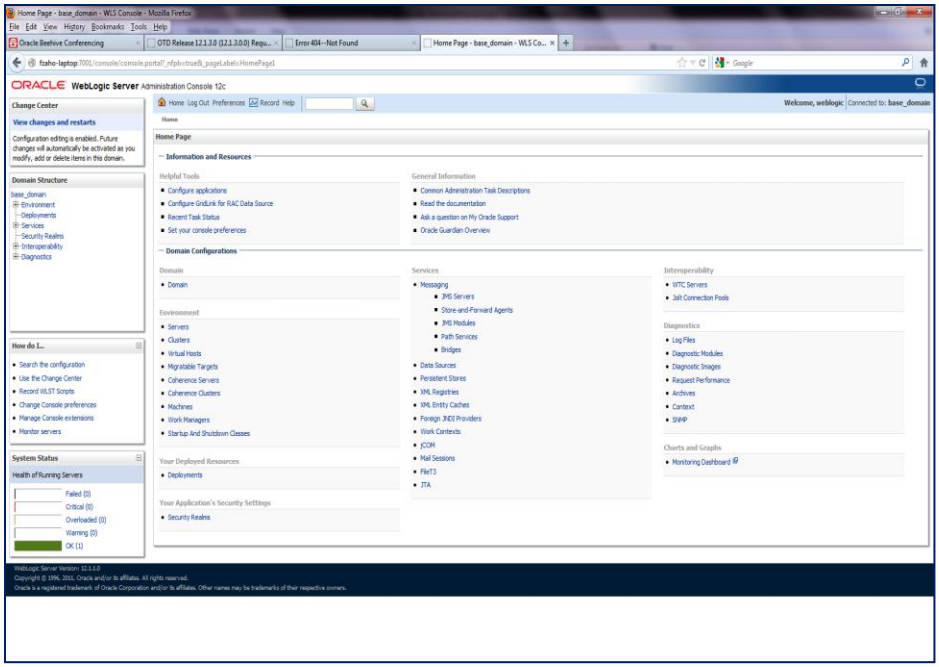
After the provisioning finishes, it's ready for the customer to continual tune the configuration and ready for deploying the custom applications.

WebLogic and OTD management

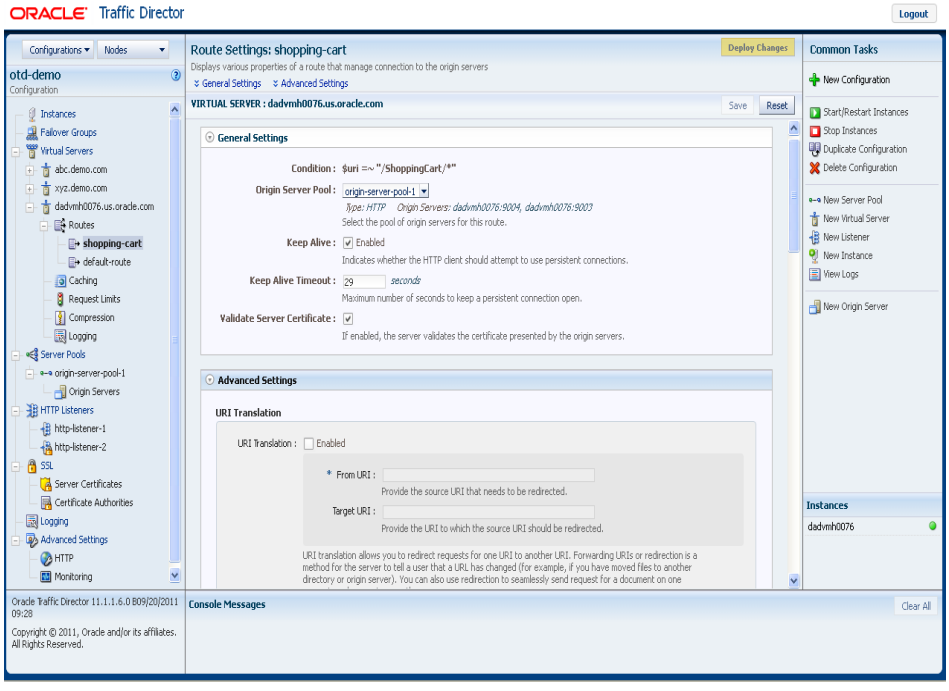
There are multiple tools available for managing WebLogic Server , OTD and VM instances post provisioning. The usages are exact the same as in a physical environment.

- Oracle WebLogic Server management
  - Admin console
  - WLST
  - External Enterprise Manager Cloud Control
- Oracle Traffic Director
  - Oracle Traffic Director admin console
  - CLI tadm
  - External Oracle Enterprise Manager Cloud Control
- VM template management
  - oakcli

WebLogic Management Admin Console:



Oracle Traffic Director Admin Console:



OAKCLI examples:

Example of managing VM templates:

```
oakcli import vmtemplate <template_name> -files=<file1,file2 ...> -repo=<repo_name>
```

```
oakcli configure vmtemplate <vm name> [-vpcu=<x> maxvcpu=<x> -cpuprio=<x> -cpucap=<x>
-memory=<x> -maxmemory=<x> -os=<x> -keyboard=<x> -mouse=<x> -domain=<x> -
network=<[net1,net2]>] –disk=[disks]
```

```
oakcli delete vmtemplate <template name>
```

```
oakcli show vmtemplate [<template_name>]
```

Example of managing VM instances:

```
oakcli clone vm <vm name> -vmtemplate=<template_name> -repo=<repo_name>
```

```
oakcli configure vm <name> [-vcpu <x> -maxvcpu <x> -cpuprio <x> -cpucap <x> -memory <x>
-maxmemory <x> -os <x> -keyboard <x> -mouse <x> -domain <x> -network <x> -autostart <x>
-disk <x> -bootoption <x> -cpupool <poolname>]
```

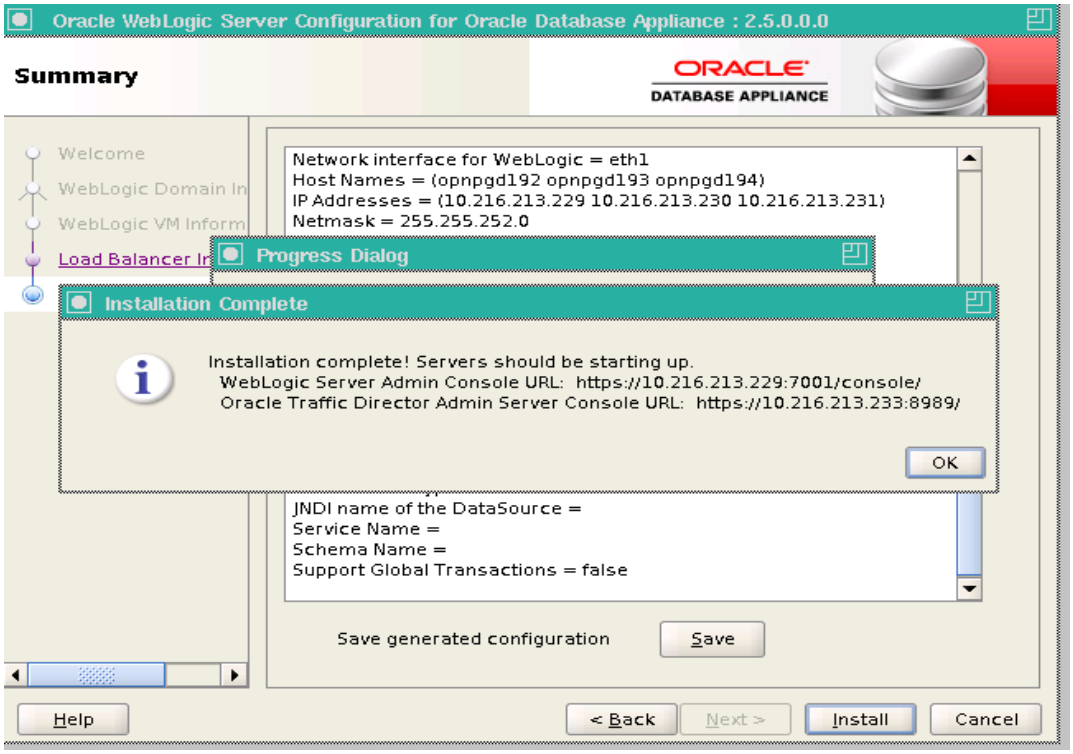
```
oakcli delete vm <vm name>
```

```
oakcli show vm [<vm_name>]
```

```
oakcli start vm <vm_name>
```

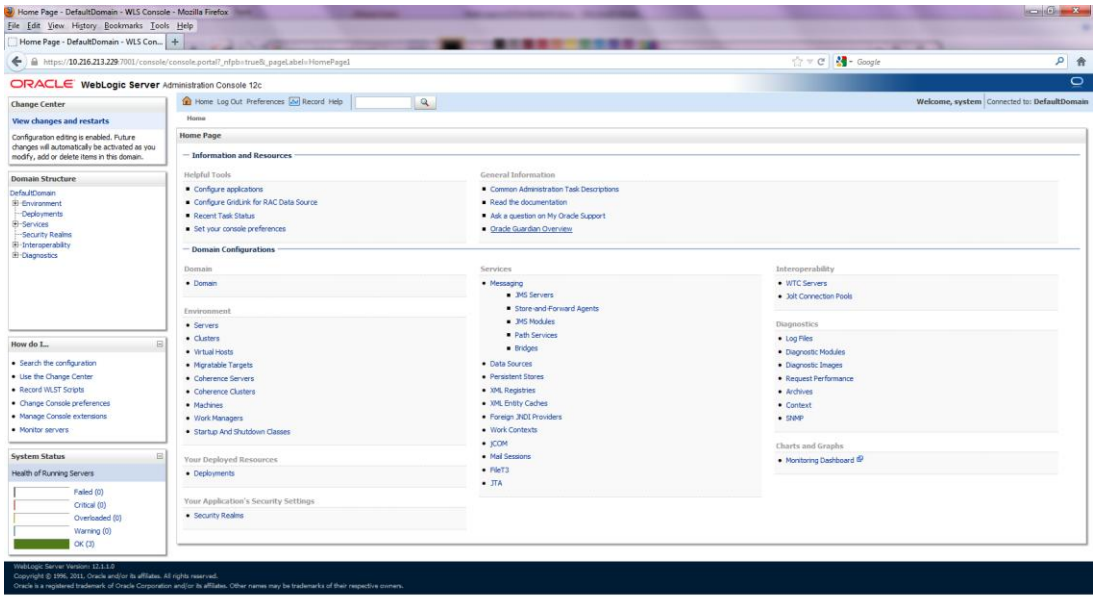
```
oakcli stop vm <vm_name>  [-force]
```

Finished the provisioning process



When the provisioning finishes, the servers will be starting up and the Admin Console urls for both WebLogic Server and OTD are displayed as part of summary message.

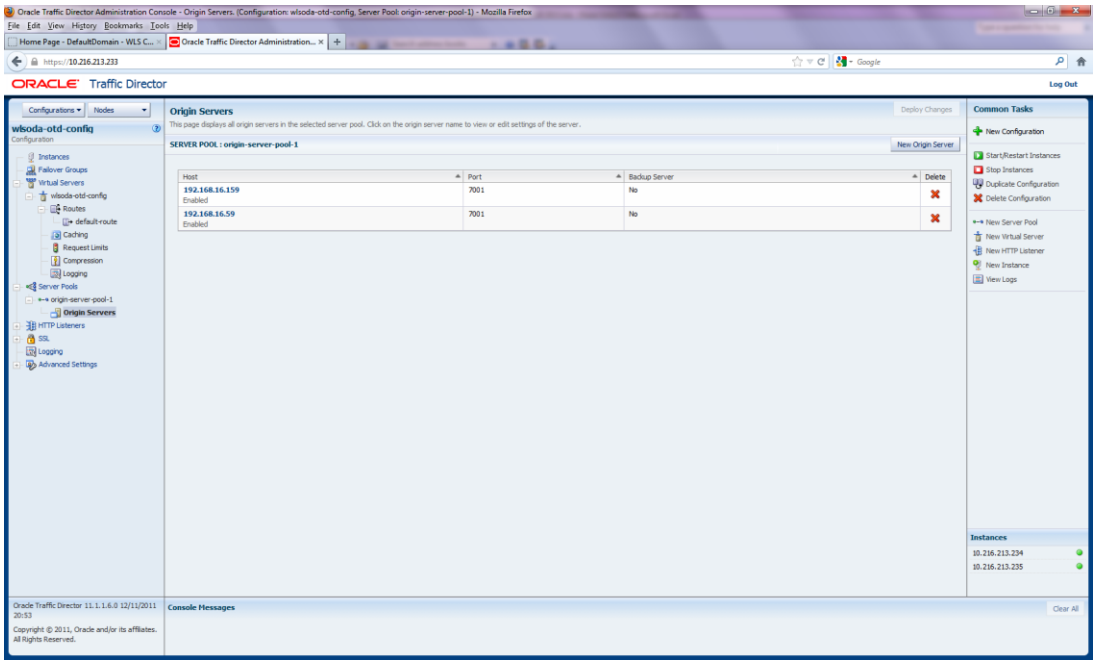
Accessing WebLogic Admin Console with the following url:
https://10.216.213.229:7001/console/console.portal?_nfpb=true&_pageLabel=HomePage1



https://10.216.213.229:7001/console/console.portal?_nfpb=true&_pageLabel=GuardianSummaryPage

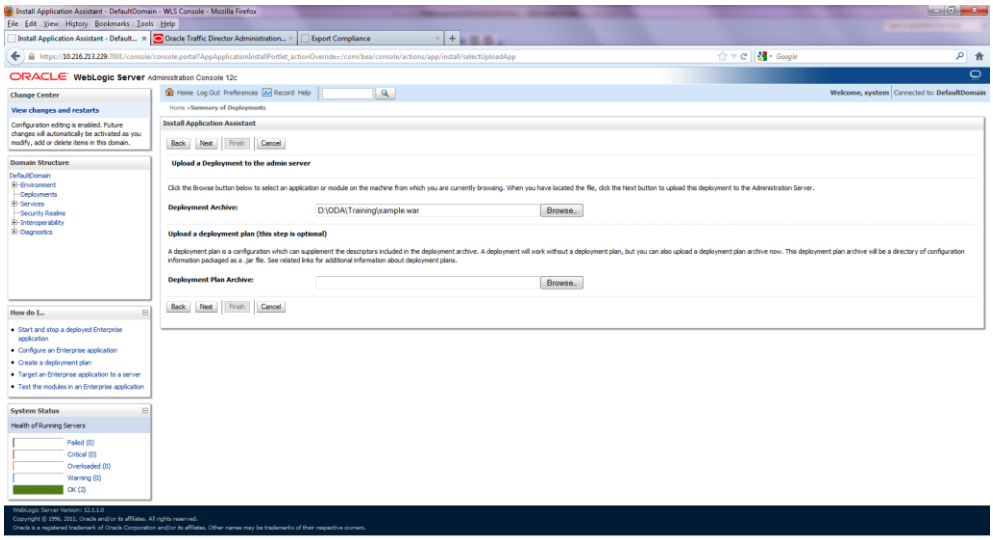
Accessing OTD Admin Console at the following url:

https://10.216.213.233/

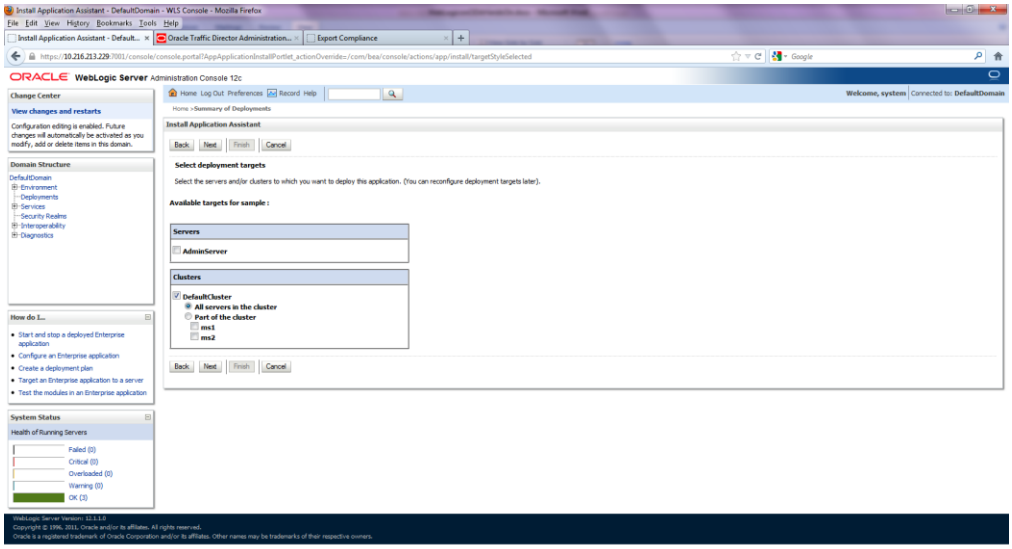


Deploy the sample application

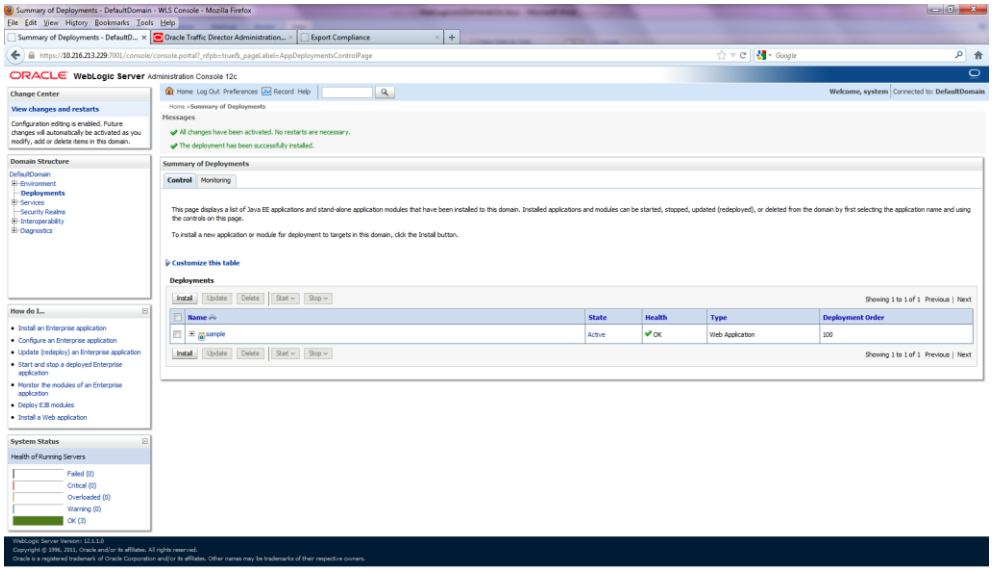
Upload the achieve:



Target the application to whole cluster:



The sample application has been successfully deployed:

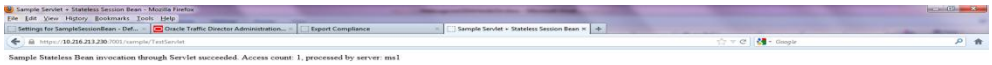


Run the application

The application either can be accessed directly from WebLogic Server or it can be accessed via OTD VIP for HA and load balancing.

Via WebLogic managed server

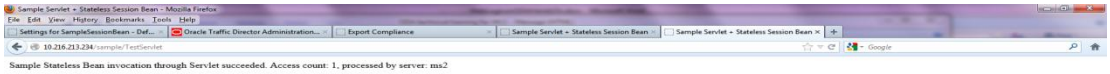
https://10.216.213.230:7001/sample/TestServlet



It also can be accessed via OTD VIP. The OTD instances have been set up front-ending WebLogic cluster during the provisioning process.

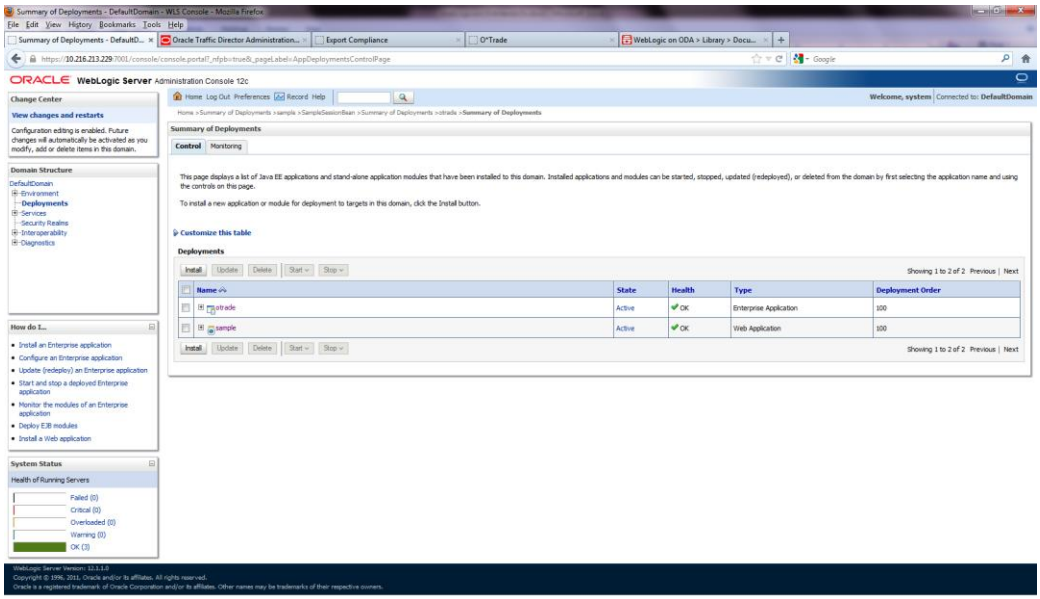
http://10.216.213.234/sample/TestServlet

Here 10.216.213.234 is set as one of OTD instance ip address



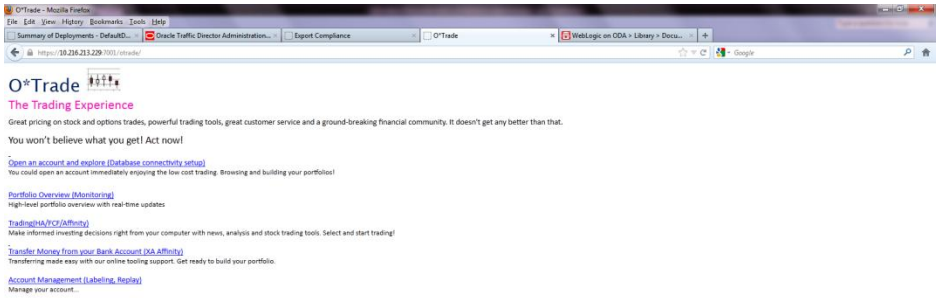
The deployment should work same as in your physical environment. So any applications deployed to your regular WebLoigc install should be able to be deployed and work here as well.

As one of additional example, the Active GridLink for RAC demo application has been deployed to the two-node clustered WebLogic Server: otrade.ear



It can be accessed at:

https://10.216.213.229:7001/otrade/



This is the best integrated solution for High Availability and high performance across WebLogic Server and Oracle Database RAC.

Enjoy!