



Cloning Oracle Fusion Middleware 11g

Zoran Jovanović



Solution Architect

About me



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- ◆ Oracle ACE 2011
- ◆ Working with Oracle technology since 1989
- ◆ Installation, configuration and support for various Oracle products
 - Database
 - Internet application server
 - Fusion middleware
 - Hyperion EPM
- ◆ System architect
 - Architecture planning
 - Capacity planning
 - Performance tuning
- ◆ Numerous successful projects based on Oracle technology
- ◆ Trainer experience, Oracle courses for
 - Database administrators
 - Application server administrators
- ◆ Speaker on various Oracle conferences
 - IOUG
 - EOUG
 - HrOUG
 - SiOUG
 - SrOUG

FMW movement scripts

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- ◆ to move your environment to different server
- ◆ replicating (cloning) a test environment to a production environment
- ◆ enable you to copy:
 - Middleware home and the Oracle homes
 - Oracle WebLogic Server domains,
 - configuration of certain Oracle Fusion Middleware components
- ◆ minimize the amount of work required to reapply all the customization and configuration changes

FMW movement scripts

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- ◆ Create a Middleware home that is a copy of a production, test, or development environment
- ◆ Prepare a "gold" image of a patched Middleware home
- ◆ Move the configuration of a domain or Oracle instance, including the components in the domain or Oracle instance
- ◆ move to the same or a different host
- ◆ source and target environments must have the same operating system and platform architecture

FMW movement scripts

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You can move the following

- ◆ Middleware home: copy the Middleware home, the Oracle WebLogic Server home, and all of the Oracle homes within the Middleware home
- ◆ Java components: copy the configuration of a domain containing Java components
- ◆ Oracle instance: copy the configuration of an Oracle instance to the same or a different Middleware home
- ◆ one of the system components within an Oracle instance

FMW movement scripts

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support moving most of the Oracle Fusion Middleware components:

- ◆ Oracle Business Intelligence
- ◆ Oracle SOA Suite
- ◆ Oracle Identity Management
- ◆ Oracle Forms and Reports
- ◆ Oracle Web Center
- ◆ Oracle Data Integrator
- ◆ Oracle HTTP Server
- ◆ Oracle Essbase

FMW movement scripts

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copyBinary Script

- ◆ Creates an archive file of the source Middleware home, including all of its Oracle homes and its WebLogic Server home

pasteBinary Script

- ◆ Applies the archive to the target destination, by pasting the binary files of the source Middleware home to the target environment

FMW movement scripts

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copyConfig Script

- ◆ Creates a configuration archive that contains the snapshot of the configuration of
 - an Oracle WebLogic Server domain
 - or an Oracle instance
 - or an Oracle instance and the specified individual system component
 - or Node Manager

extractMovePlan Script

- ◆ Extracts configuration information from the archive into a move plan. It also extracts any needed configuration plans

FMW movement scripts

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pasteConfig Script

- ◆ Applies the copied configurations from the source environment to the target environment
 - for Java Components re-creates the configuration information for the Oracle WebLogic Server domain
 - for Oracle Instances re-creates the configuration information for the Oracle instance and all of its system components
 - for System Components re-creates the configuration information for the Oracle instance and the specified system component
 - for Node Manager re-creates the configuration information for Node Manager

FMW movement scripts

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obfuscatePassword Script

- ◆ Generates a file that contains the obfuscated password. In the scripts and in the move plans, you often need to provide files containing passwords.

Requirements for movement

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Source environment

◆ Before you start copyBinary

- On Windows, at the source, stop the Administration Server and any Managed Servers running in the Middleware home.
- In addition, stop any Java or WebLogic processes.
- (On UNIX, you do not need to stop the servers.)

◆ Before you start copyConfig

- For Java components make sure that the Administration Server and all Managed Servers are started.

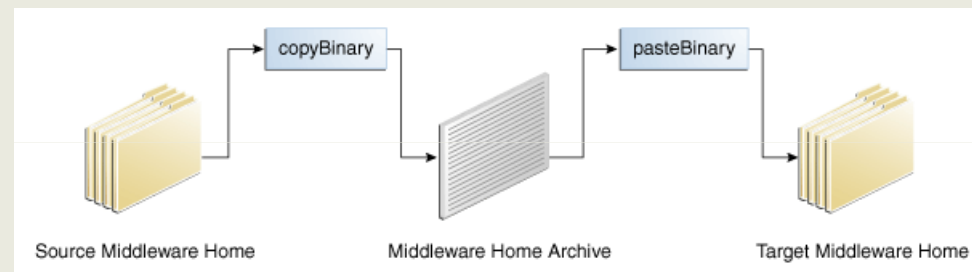
Requirements for movement

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Target environment

- ◆ must be on the same operating system as the source environment.
- ◆ the operating system architecture must be the same in both environments.
- ◆ All Oracle homes in the Middleware home must be either all 32 bit or all 64 bit.
- ◆ must have the same superuser or administrative user as the user at the source environment
- ◆ The database must be the same type of database as in the source environment
- ◆ If the database is not tuned correctly, the copyConfig and pasteConfig operations can incur performance issues

Movement of binary files



Movement of a Middleware Home

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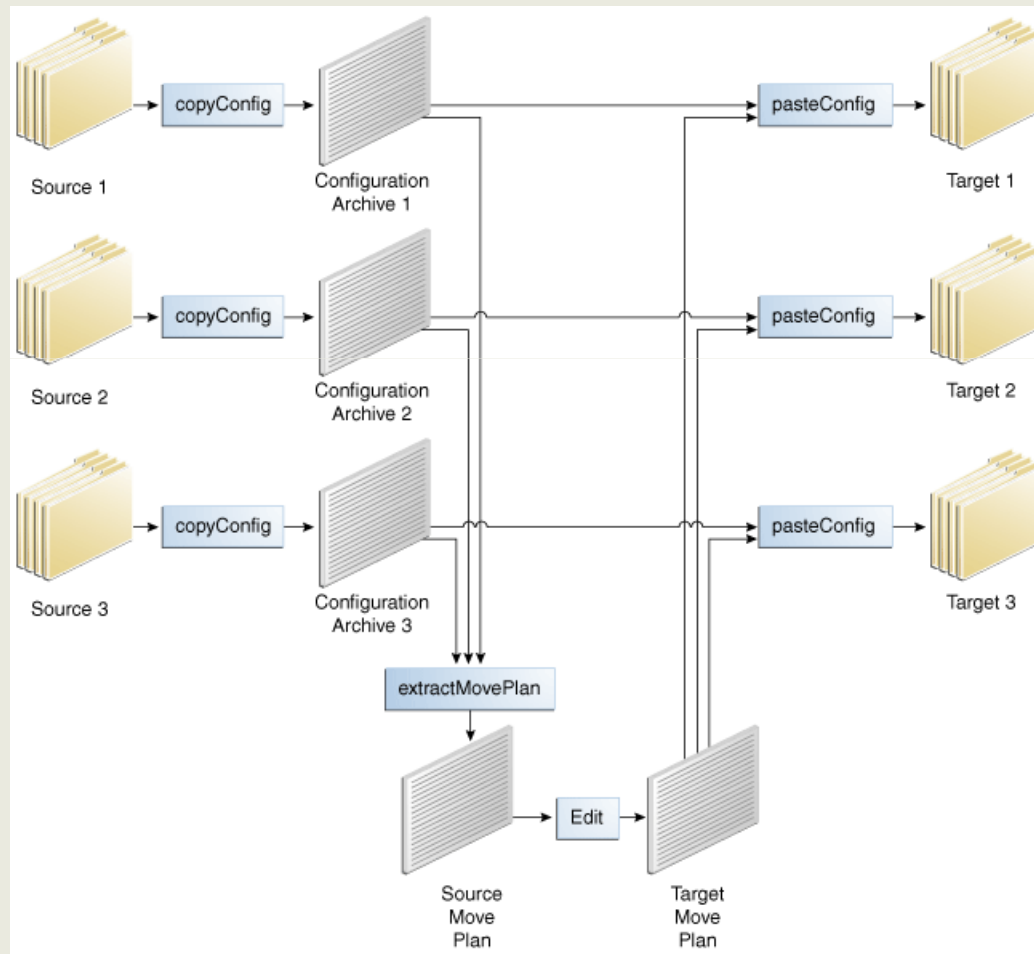
- ◆ At the source, you run the copyBinary script, specifying the Middleware home that you want to copy.
 - The script prepares the source and creates an archive.
 - It also records the file permissions of the Middleware home and the Oracle homes within the Middleware home.
- ◆ Copy archive file from source to target
- ◆ Copy cloningclient.jar from source to target

Movement of a Middleware Home

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- ◆ At the destination, you run the pasteBinary script, specifying a destination for the Middleware home.
 - The script checks to see that the prerequisites are met at the destination.
 - It extracts the files from the archive file, registers the Oracle homes with the Oracle inventory and registers the WebLogic Server home with the Middleware home.
 - The script then restores the file permissions and relinks any files if that is necessary.

Movement of configurations



Movement of Components

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- ◆ create an archive of the source component's configuration and use the archive to create the component at the target:
 - For Node Manager, you use the copyConfig, extractMovePlan, and pasteConfig scripts to copy the configuration.
 - For Java components, such as Oracle SOA Suite, you use the copyConfig, extractMovePlan, and pasteConfig scripts to copy the configuration, including the domain, the Administration Server, and the Managed Servers.

Movement of Components

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- For Oracle instances, you use the copyConfig, extractMovePlan, and pasteConfig scripts to copy the configuration of the Oracle instance, including all system components in the Oracle instance.
- you can specify that only one of the components, such as Oracle HTTP Server, within an Oracle instance be copied. In that case, the configuration of the Oracle instance and the specified component are moved.

Installing the Database on the Target Environment

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- ◆ Many components, such as Oracle Internet Directory, Oracle SOA Suite, and Oracle WebCenter Portal, require a database.
- ◆ You can install a new database or you can copy the database from the source environment:
- ◆ Install a new database:
 - Install and configure the database software.
 - Create the required schemas in the target database using RCU
- ◆ Create a duplicate database using the Oracle Database RMAN duplicate command

Movement of Forms Services

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- ◆ On Windows, at the source, stop the Administration Server and any Managed Servers running in the Middleware home. (On UNIX, you do not need to stop the servers.)

Movement of Forms Services

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- ◆ At the source, execute the copyBinary script, which copies the Middleware home and the WebLogic Server home and the Oracle homes contained within the Middleware home

```
copyBinary.sh -javaHome  
/scratch/Oracle/Middleware1/jrockit_160_20_D1.1.0-  
18  
-archiveLoc /tmp/mw_copy.jar  
-sourceMWHomeLoc /scratch/Oracle/Middleware1  
-invPtrLoc /scratch/oracle/oraInst.loc
```

Movement of Forms Services

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- ◆ copy the Node Manager configuration, by executing the copyConfig script.

```
copyConfig.sh -javaHome  
/Oracle/Middleware1/jrockit_160_20_D1.1.0-18  
-archiveLoc /tmp/nm.jar  
-sourceNMHomeLoc /Oracle/Middleware/wlserver_  
10.3/common/nodemanager  
-logDirLoc /tmp/logs
```

Movement of Forms Services

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- ◆ copy binary and config archive files, the pasteBinary script and the cloningclient.jar file to the target system and ensure that they have execute permission.
- ◆ On Linux and UNIX, if the target system does not contain any installed Oracle products, you must create an oraInst.loc file

```
inst_group=dba
```

```
inventory_loc=/scratch/oracle1/oraInventory
```

Movement of Forms Services

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- ◆ At the target, extract the files from the archive using the pasteBinary script

```
pasteBinary.sh -javaHome  
/scratch/Oracle/Middleware1/jrockit_160_20_D1.1.0-  
18
```

```
-archiveLoc /tmp/mw_copy.jar
```

```
-targetMWHomeLoc /scratch/oracle/MW_Home_prod
```

- ◆ At the target, delete the Node Manager directory and the files in it

Movement of Forms Services

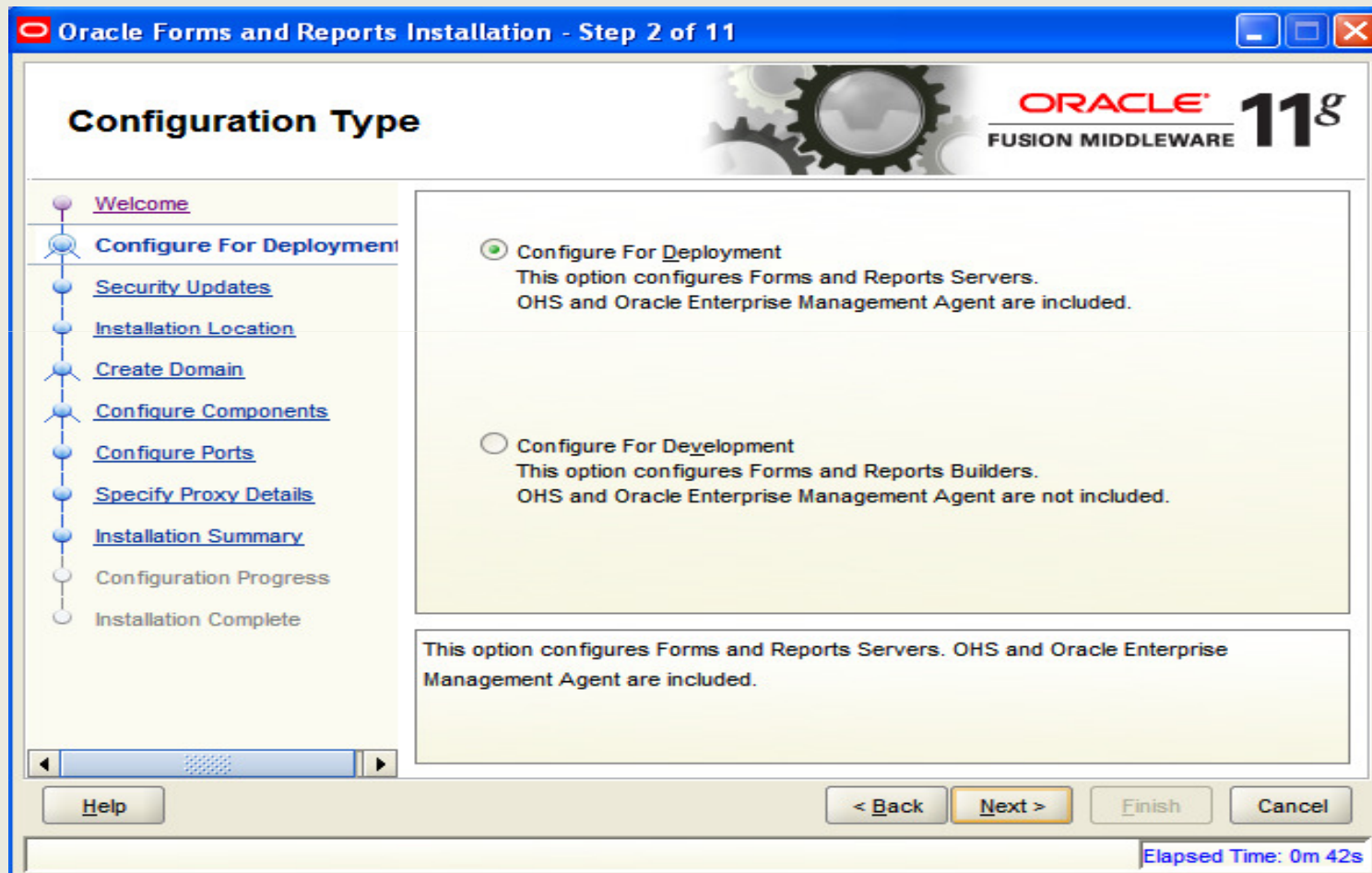
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- ◆ At the target, extract the files from the archive using the pasteConfig script

```
pasteConfig -javaHome  
/Oracle/middleware/jrockit_160_17_R28.0.0-679/  
-archiveLoc /tmp/nm.jar  
-targetNMHomeLoc /Oracle/Middleware/wlserver_  
10.3/common/nodemanager  
-targetMWHomeLoc /Oracle/Middleware
```

Movement of Forms Services Configure Classic Instance

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Configuration Type

ORACLE 11^g
FUSION MIDDLEWARE

- Welcome
- Configure For Deployment**
- Security Updates
- Installation Location
- Create Domain
- Configure Components
- Configure Ports
- Specify Proxy Details
- Installation Summary
- Configuration Progress
- Installation Complete

Configure For Deployment
 This option configures Forms and Reports Servers.
 OHS and Oracle Enterprise Management Agent are included.

Configure For Development
 This option configures Forms and Reports Builders.
 OHS and Oracle Enterprise Management Agent are not included.

This option configures Forms and Reports Servers. OHS and Oracle Enterprise Management Agent are included.

Help < Back Next > Finish Cancel


Elapsed Time: 0m 42s

Movement of Forms Services Configure Classic Instance

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Oracle Forms and Reports Installation - Step 4 of 11

Installation Location



- Welcome
- Configure For Deployment
- Security Updates
- Installation Location**
- Create Domain
- Configure Components
- Configure Ports
- Specify Proxy Details
- Installation Summary
- Configuration Progress
- Installation Complete

Oracle Middleware Home Location:

Oracle Home Directory:

Weblogic Server Location:

Oracle Instance Location:

Oracle Instance Name:

This is the location containing the Weblogic Server.

Elapsed Time: 1m 57s

Movement of Forms Services Configure Classic Instance

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Oracle Forms and Reports Installation - Step 5 of 11

Select Domain

ORACLE 11g
FUSION MIDDLEWARE

- Welcome
- Configure For Deployment
- Security Updates
- Installation Location
- Create Domain**
- Configure Components
- Configure Ports
- Specify Proxy Details
- Installation Summary
- Configuration Progress
- Installation Complete

Create Domain

Username:

User Password:

Confirm Password:

Domain Name:

Domain Location:

Extend Domain

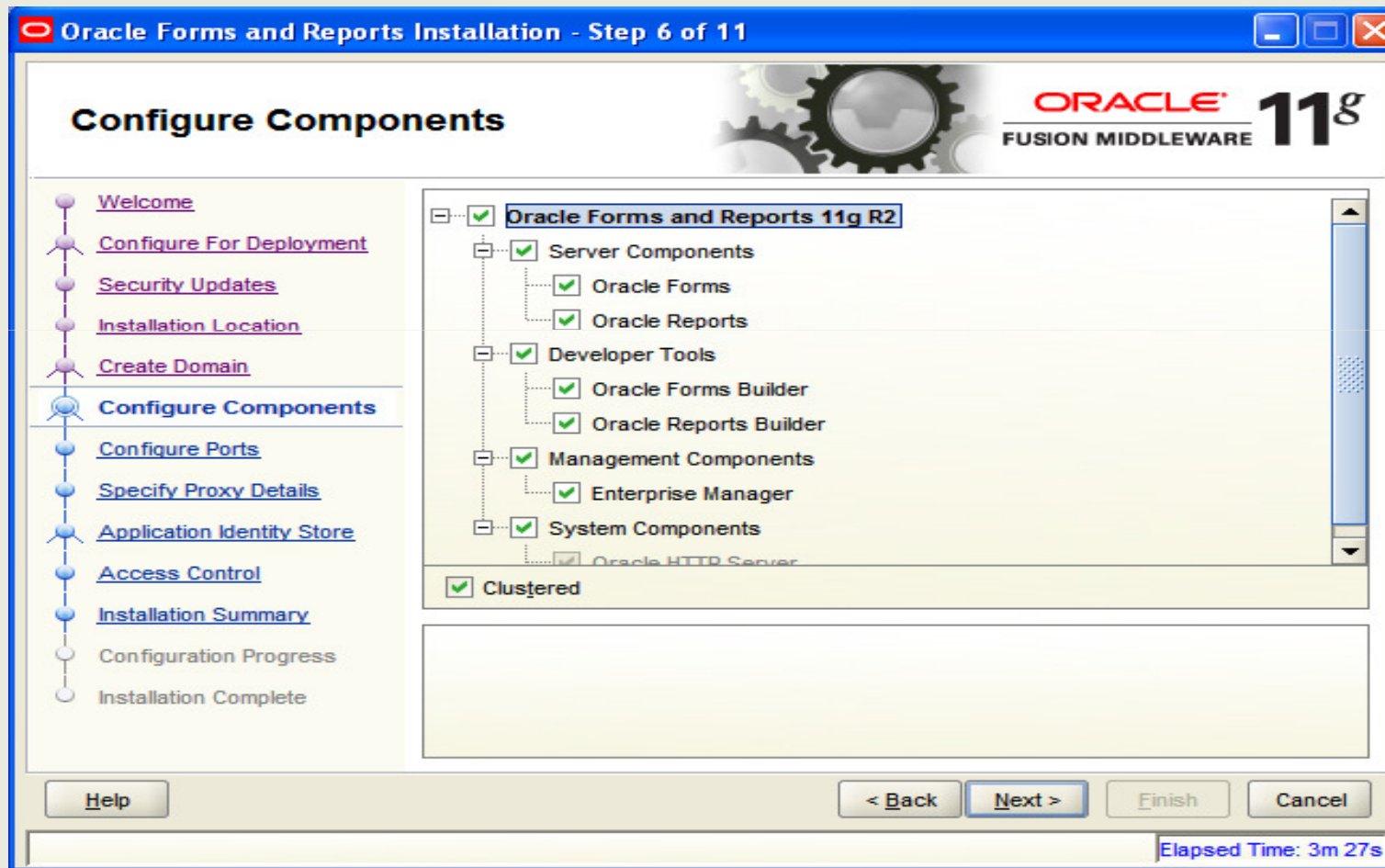
Expand Cluster

Help

Elapsed Time: 2m 52s

Movement of Forms Services Configure Classic Instance

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Oracle Forms and Reports Installation - Step 6 of 11

Configure Components

ORACLE 11g
FUSION MIDDLEWARE

- Welcome
- Configure For Deployment
- Security Updates
- Installation Location
- Create Domain
- Configure Components**
- Configure Ports
- Specify Proxy Details
- Application Identity Store
- Access Control
- Installation Summary
- Configuration Progress
- Installation Complete

Oracle Forms and Reports 11g R2

- Server Components
 - Oracle Forms
 - Oracle Reports
- Developer Tools
 - Oracle Forms Builder
 - Oracle Reports Builder
- Management Components
 - Enterprise Manager
- System Components
 - Oracle HTTP Server

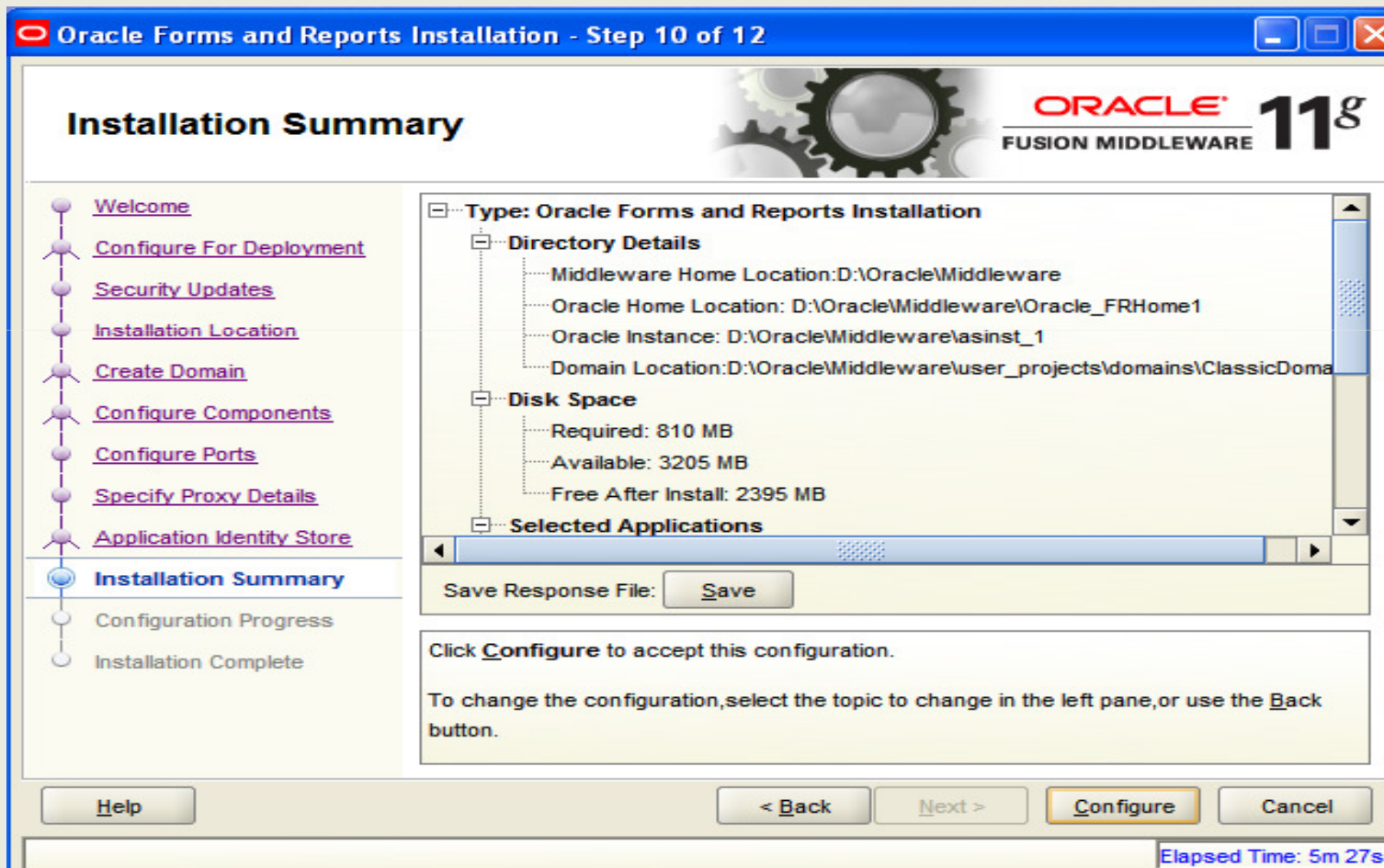
Clustered

Help < Back Next > Finish Cancel

Elapsed Time: 3m 27s

Movement of Forms Services Configure Classic Instance

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Oracle Forms and Reports Installation - Step 10 of 12

Installation Summary

ORACLE 11g
FUSION MIDDLEWARE

- Welcome
- Configure For Deployment
- Security Updates
- Installation Location
- Create Domain
- Configure Components
- Configure Ports
- Specify Proxy Details
- Application Identity Store
- Installation Summary**
- Configuration Progress
- Installation Complete

Type: Oracle Forms and Reports Installation

- Directory Details**
 - Middleware Home Location: D:\Oracle\Middleware
 - Oracle Home Location: D:\Oracle\Middleware\Oracle_FRHome1
 - Oracle Instance: D:\Oracle\Middleware\asinst_1
 - Domain Location: D:\Oracle\Middleware\user_projects\domains\ClassicDoma
- Disk Space**
 - Required: 810 MB
 - Available: 3205 MB
 - Free After Install: 2395 MB
- Selected Applications**

Save Response File:

Click **Configure** to accept this configuration.

To change the configuration, select the topic to change in the left pane, or use the **Back** button.


Elapsed Time: 5m 27s

Movement of Forms Services Configure Classic Instance

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Oracle Forms and Reports Installation - Step 11 of 12

Configuration Progress



- Welcome
- Configure For Deployment
- Security Updates
- Installation Location
- Create Domain
- Configure Components
- Configure Ports
- Specify Proxy Details
- Application Identity Store
- Installation Summary
- Configuration Progress**
- Installation Complete

Configuration Tools		Status
Name		
Executing: opmnctl startproc ias-component=RptSvr_f		✓
Creating EM Agent		✓
Reloading OPMN		✓
Executing: opmnctl restartproc ias-component=ohs1		✓
Creating Shortcuts		✓
Restarting Managed Server: WLS_FORMS		✓
Restarting Managed Server: WLS_REPORTS		✓

Configuration Log Location: C:\Program Files\Oracle\Inventory\logs\install2014-03-31_12-53-31PM.log

⊕ ✓ Application Configuration

Elapsed Time: 28m 22s

Movement of Forms Services Configure Classic Instance

ORACLE Enterprise Manager 11g Fusion Middleware Control

Setup Help Log O

Farm Topology

Logged in as weblogic
Page Refreshed 31-Mar-2014 14:57:55 CEST

Farm_ClassicDomain

Deployments Up (11)

Name	Status	Target
Application Deployments		
Internal Applications		
formsapp(11.1.2)	↑	cluster_forms
formsapp(11.1.2)	↑	WLS_FORMS
formsconfigbeans	↑	cluster_forms
formsconfigbeans	↑	WLS_FORMS

Fusion Middleware Up (7)

Name	Status	Host	CPU Usage (%)
WebLogic Domain			
ClassicDomain			
AdminServer	↑	192.168.200.129	0.00
cluster_forms	↑		
WLS_FORMS	↑	192.168.200.129	0.00
cluster_reports	↑		
WLS_REPORTS	↑	192.168.200.129	47.65
Forms			
forms	↑	192.168.200.129	
Reports			
reports(11.1.2) (WL...)	↑	192.168.200.129	
ReportsTools	↑	192.168.200.129	
RptSvr_forms2_asin...	↑	192.168.200.129	0.00
Web Tier			
ohs1	↑	192.168.200.129	0.00

Move Forms applications

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- ◆ Copy the Oracle Forms Services application files (fmx, mmx, obx and plx) from the source environment to the target environment
- ◆ Move the application-related data from the source environment to a database in the target environment
- ◆ Create the relevant target database entries in the SQL*Net configuration file, tnsnames.ora
- ◆ Copy any customizations in the following files: formsweb.cfg, default.env, base.htm, basejpi.htm, webutil.cfg, webutiljpi.htm, webutilbase.htm, forms.conf
- ◆ Copy the following files from the source environment to the target environment:
 - ftrace.cfg, any customized Forms Java EE applications .ear file, jvmcontrollers.cfg, search_replace.properties, converter.properties,
 - UNIX: ORACLE_INSTANCE/bin/frm*.sh
 - Windows: ORACLE_INSTANCE\bin\frm*.bat

Movement of OHS instance to different host

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Oracle Enterprise Manager 11g Fusion Middleware Control

Logged in as weblogic
Page Refreshed Mar 13, 2014 1:40:05 PM WIT

Deployments 100% Up (5)

Name	Status	Target
Application Deployments		
Internal Applications		

Fusion Middleware 100% Up (3)

Name	Status	Host	CPU Usage (%)
WebLogic Domain			
Blog_Domain			
AdminServer	↑	blogadminvhr.nostrat	15.28
WLS_App1	↑	machine1.nostrat	
Web Tier			
ohs1	↑	machine1.nostrat	0.02

Farm Resource Center

Before You Begin

- Introduction to Oracle Fusion Middleware
- Understanding Key Oracle Fusion Middleware Farm Concepts
- Overview of Oracle Fusion Middleware Administration Tools

Typical Administration Tasks

- Getting Started Using Oracle Enterprise Manager Fusion Middleware Control
- Navigating Within Fusion Middleware Control

Movement of OHS instance to different host

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- ◆ make web1.jar archive that contains the configuration of OHS_Instance1.

```
[oracle@machine1 bin] $ ./copyConfig.sh -javaHome /u01/app/oracle/product/fmw/jrockit-jdk1.6.0 -archiveLoc ~/web1.jar -sourceInstanceHomeLoc /u02/app/oracle/admin/OHS_Instance1 -logDirLoc ~/copyConfigLogs
```

- ◆ Extract the archive web1.jar movement plan of the machine1.

```
[oracle@machine1 bin] $ ./extractMovePlan.sh -javaHome /u01/app/oracle/product/fmw/jrockit-jdk1.6.0 -archiveLoc ~/web1.jar -planDirLoc ~/web_plans -logDirLoc ~/extractMovementPlanLogs
```

Movement of OHS instance to different host

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- ◆ changing the ServerName of machine1.nostratech.com be machine2.nostratech.com in moveplan.xml

```
...  
<configProperty>  
  <name>ServerName</name>  
  <value>machine2.nostratech.com</value>  
  <itemMetadata>  
    <dataType>STRING</dataType>  
    <scope>READ_WRITE</scope>  
  </itemMetadata>  
</configProperty>  
...
```

Movement of OHS instance to different host

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- ◆ Copy web1.jar and directory containing moveplan.xml to machine2.
- ◆ Clone OHS_Instance1 configuration on machine1 to machine2 WT_Instance1 on using scripts pasteConfig.sh

```
./pasteConfig.sh -javaHome  
/u01/app/oracle/product/fmw/jrockit-jdk1.6.0 -  
archiveLoc ~/web1.jar -movePlanLoc  
~/web_plans/moveplan.xml -targetOracleHomeLoc  
/u01/app/oracle/product/fmw/web -  
targetInstanceHomeLoc  
/u02/app/oracle/admin/WT_Instance1 -  
targetInstanceName webtier1 -logDirLoc  
~/pasteConfigLogs
```

Movement of OHS instance to different host

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- ◆ Register webtier1 to Blog_Domain using opmnctl script on machine2.

```
[oracle@machine2 bin] $ ./opmnctl registerinstance -  
adminHost blogadminvhn.nostratech.com -adminPort  
7001
```

Movement of OHS instance to different host

The screenshot shows the Oracle Enterprise Manager 11g Fusion Middleware Control interface for the Farm_Blog_Domain. The page is titled "Farm_Blog_Domain (Oracle Fusion Middleware Farm) - Oracle Enterprise Manager (weblogic)". The browser address bar shows the URL "192.168.0.192:7777/em/faces/as/as/wlFarmHome?target=Farm_Blog_Domain&type=orade_i".

The interface displays the following components:

- Deployments:** A green 3D pie chart shows 100% up status for 5 instances.
- Fusion Middleware:** A green 3D pie chart shows 75% up status (3 instances) and 25% down status (1 instance).
- WebLogic Domain:** A table showing the status of components within the Blog_Domain.
- Web Tier:** A table showing the status of OHS instances on different hosts.
- Farm Resource Center:** A section with links for "Before You Begin" and "Typical Administration Tasks".

Name	Status	Host	CPU Usage (%)
WebLogic Domain			
Blog_Domain			
AdminServer	↑	blogadminvhr.nostrat	0.00
WLS_App1	↓		
Web Tier			
ohs1	↑	machine1.nostrat	0.02
ohs1	↑	machine2.nostrat	0.02

Movement of OHS instance to different host

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- ◆ Remove web1 in Blog_Domain using opmnctl script on machine1

```
[oracle@machine1 bin] $ ./opmnctl unregisterinstance
```


Movement of OHS instance to different host

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Farm_Blog_Domain (Oracle Fusion Middleware Farm) - Oracle Enterprise Manager (weblogic)

192.168.0.192:7777/em/faces/as/as/wlFarmHome?target=Farm_Blog_Domain&type=oracle_i

ORACLE Enterprise Manager 11g Fusion Middleware Control

Setup Help Log Out

Farm Topology

Farm_Blog_Domain Logged in as: weblogic
Page Refreshed Mar 15, 2014 4:58:35 PM WIT

Deployments 100% Up (5)

Name	Status	Target
Application Deployments		
Internal Applications		

Fusion Middleware 67% Up (2) 33% Down (1)

Name	Status	Host	CPU Usage (%)
WebLogic Domain			
Blog_Domain			
AdminServer	Up	blogadminwhn.ncstra	62.50
WLS_App1	Down		
Web Tier			
ohs1	Up	machine2.nostrattech	0.01

Farm Resource Center

Before You Begin

- Introduction to Oracle Fusion Middleware
- Understanding Key Oracle Fusion Middleware Farm Concepts
- Overview of Oracle Fusion Middleware Administration Tools

Typical Administration Tasks

- Getting Started Using Oracle Enterprise Manager Fusion Middleware Control
- Navigating Within Fusion Middleware Control

References

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- ◆ Oracle® Fusion Middleware Administrator's Guide 11g Release 1 (11.1.1)
- ◆ Oracle® Fusion Middleware Administrator's Guide 11g Release 2 (11.1.2)
 - 20 Using the Movement Scripts
 - 21 Moving from a Test to a Production Environment

Questions



