

Installation Manual  
Oracle FLEXCUBE Corporate Lending 12.1.0.0.0  
[April] [2016]

Part No. E74823-01



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# 1. Oracle FLEXCUBE Lending Deployment on 11g Release 2 Application Server (UNIX)

## 1.1 Pre-requisites

The following are pre-requisites for deploying Oracle FLEXCUBE on the Oracle 11G application server.

You should have a valid Unix login ID using which you can login to the application server and access the location where ORACLE FLEXCUBE files (fmb/pll Etc) will be copied, referred to as FCOL root directory (FCOL) henceforth

1. Weblogic (10.3.6) Installed
2. Oracle Forms and Reports 11g Release 2 (11.1.2.2.0) installed
3. Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 Installed
4. On successful installation of forms please note below configuration options which will be used in deployment
5. Configuration Options
  - Middleware Home Location: /scratch/app/wl1036
  - Oracle Home Location: /scratch/app/wl1036/Oracle\_FRHome1
  - Oracle Instance Location: /scratch/app/wl1036/asinst\_1
  - Oracle Instance: asinst\_1
  - Domain Option: Create Domain
  - Domain Name: ClassicDomain
  - Domain Home: /scratch/app/wl1036/user\_projects/domains/ClassicDomain
  - Domain Host Name: whf00atk.in.oracle.com
  - Domain Port No: 7002
  - User Name: weblogic
  - Automatic Port Detection: true
  - Administrator Console: <http://whf00atk.in.oracle.com:7002/console>
  - EM Console: <http://whf00atk.in.oracle.com:7002/em>
  - EMAgent URL: <http://whf00atk.in.oracle.com:5155/emd/main>
  - Forms URL: <http://whf00atk.in.oracle.com:8888/forms/frmservlet>
  - Reports URL: <http://whf00atk.in.oracle.com:8888/reports/rwservlet>
6. TNS connectivity to the database
7. Ensure that the application server is able to connect to the database server via SQL\*Plus. You will have to modify the tnsnames.ora file located under /Oracle\_FRHome1/network/admin

## 1.2 Steps to Deploy ORACLE FLEXCUBE

1. Create a folder called FCOL in the installation path in parallel to asinst\_1 and Oracle\_FRHome1

2. Create below folders under FCOL
3. The final directory structure would resemble

```
<< Oracle_FRHome1>> -- created by forms installer
<< asinst_1>>      -- created by forms installer
<< user_projects>> -- created by weblogic installer
<< FCOL>>          --will be our root directory for sources
<< FCOL >>/fmb
<< FCOL >>/pll
<< FCOL >>/mmb
<< FCOL >>/fmx
<< FCOL >>/fmx/eng
<< FCOL >>/plx
<< FCOL >>/mmx
```

4. Copy all the fmb, pll and mmb files to the corresponding folder from the sources
5. Create soft links

UNIX environment being case sensitive it becomes mandatory to circumvent the problem of case mismatches by creating soft links. A soft link or a symbolic link is a logical pointer to a physical file. We will be creating soft links for all the plls in the folder pll. Please refer the file. Ensure to modify file based on your location

*Please refer the link.txt file provided in the Utilities folder.*

6. Compilation of sources

Before compilation of sources please ensure below environment variables are set on your command window. Please refer configuration options for the values to be input

```
export MW_HOME=/scratch/app/w1036
export WLS_HOME=$MW_HOME
export WL_HOME=$WLS_HOME
export ORACLE_HOME=$MW_HOME/Oracle_FRHome1
export ORACLE_INSTANCE=$MW_HOME/asinst_1
export FR_HOME=$ORACLE_HOME
export FR_INST=$ORACLE_INSTANCE
export DOMAIN_HOME=$MW_HOME/user_projects/domains/ClassicDomain
export JAVA_HOME=/scratch/work_area/DBA/jdk1.7.0_03
export PATH=.:$FR_HOME/bin:$FR_HOME/forms/mesg:$PATH
```

```
export
LD_LIBRARY_PATH=$FR_HOME/jdk/jre/lib/amd64/native_threads:$FR_HOME/jdk/jre/lib/amd64:$FR_HOME/lib:$
FR_HOME/jdk/jre/lib/amd64/server
```

```
export FORMS_BUILDER_CLASSPATH=$FR_HOME/jlib/
```

```
export FORMS_PATH=/scratch/app/wl1036/pll:/scratch/app/wl1036/mmb
```

```
export TNS_ADMIN=$FR_HOME/network/admin
```

```
export TERM=vt220
```

```
export ORACLE_TERM=$TERM
```

Please compile the files in the below order:

Refer the pllcompile.sh file provided in the Utilities folder to compile PLL's

Refer the menucompile.sh file provided in the Utilities folder to compile the MENU.

Refer the fmbcompile.sh file provided in the Utilities folder to compile FMB's.

Please copy the files to /asinst\_1/bin location. Pllcompile.sh will compile all the plls and fmbcompile.sh will compile all the FMB's. Modify the files based on your source location and schema details. Please note to compile all FMB's and PLL's with lower case and upper case extensions. Similarly use menucompilation.sh file to compile the menu

7. Copy all the icons and build a jar file with the icons. Copy the jar to

```
./Oracle_FRHome1/forms/java/icons.jar
```

8. Update the below parameters in the formsweb.cfg and default.env file from the location

```
user_projects/domains/ClassicDomain/config/fmwconfig/servers/WLS_FORMS/applications/
formsapp_11.1.2/config
```

9. Add the below parameters to the file formsweb.cfg and modify them accordingly

```
[Isdev]
form=/scratch/app/fmw1221/forms/fmx/smsignon.fmx
envFile=/scratch/app/fmw1221/user_projects/domains/base_domain/config/fmwconfig/servers/WLS_F
ORMS/applications/formsapp_12.2.1/config/default.env
otherparams=prm_init_file=/scratch/app/fmw1221/cube3.ini
imageBase=codeBase
width=1000
height=750
separateFrame=true
colorScheme=teal
background=no
WebUtilArchive=frmwebutil.jar,jacob.jar
WebUtilLogging=off
WebUtilLoggingDetail=normal
WebUtilErrorMode=Alert
WebUtilDispatchMonitorInterval=5
WebUtilTrustInternal=true
WebUtilMaxTransferSize=16384
baseSAAfile=webutilsaa.txt
fsalcheck=true
prm_debug_mode=NO
term=/scratch/fmw116/Oracle/forms11g/asinst_8/config/FormsComponent/forms/admin/resource/US/f
mrweb.res
```

```
Archive= frmall.jar,icons.jar
```

10. Replace frmweb.res file in the location mentioned above (term)

*Please refer the frmweb.res file provided in the Utilities folder.*

11. Parameters to be updated in default.env

ORACLE_HOME	/scratch/app/w11036/Oracle_FRHome1	Please refer configuration options obtained after forms installation
ORACLE_INSTANCE	/scratch/app/w11036/asinst_1	Please refer configuration options obtained after forms installation
TNS_ADMIN	/scratch/app/w11036/Oracle_FRHome1/network/admin	Copy the tnsnames.ora file to this location
FORMS_PATH	/scratch/app/w11036/fmx:/scratch/app/w11036/plx:/scratch/app/w11036/mmx:/scratch/app/w11036/fmx/eng	Path for fmx,plx,mmx
FORMS_REJECT_GO_DISABLED_ITEM	FALSE	Please add the parameter in the file

12. Once updated your login URL will be:

<http://IPaddress:portnumber/forms/frmervlet?config=lsdev>

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## 2. Oracle FLEXCUBE Lending Database Installation

### 2.1 Installation of objects on Database

1. Installation on database involves in creation and compilation of following database objects.

- Tables
- Constraints
- Functions
- Procedures
- Packages
- Views
- Triggers
- Factory Shipped Data

2. Use the file below file to encrypt the schema user and password

*Please refer the encrypt.sql file provided in the Utilities folder.*

3. Create the INI file and mention the encrypted user/password. The sample INI file is attached below. Copy the file to forms home location mentioned above in formsweb.cfg

*Please refer the cube.ini file provided in the Utilities folder.*

4. Run the Update host script. Make the changes as per current schema requirement. Refer sample sheet (updatehosts.sql) for the same.

*Please refer the update\_host.sql file provided in the Utilities folder.*

5. Update WORK\_AREA, TRACE\_AREA (PARAM\_NAME) in the table CSTB\_PARAM with path required for the debug generation.

6. Run the initial\_setup.sql to create the initial login with the basic setup.

7. Modify the initial\_setup\_post.sql based on your schema and execute the same in your schema.

*Please refer the initial\_setup.sql file provided in the Utilities folder.*

*Please refer the initial\_setup\_post.sql file provided in the Utilities folder.*

8. Update the table smtb\_cube\_param for the FORMS60\_PATH

9. Compile the invalids

10. Please maintain below data once the branches are created:

- cstb\_branch\_param
- cstb\_ops\_process\_status
- cvtm\_translation





---

## 3. Enabling SSL for Admin Server and WLS\_FORMS

### 3.1 Keystore Creation

```
keytool -genkey -keystore <keystore_name.jks> -alias <alias_name> -  
dname "CN=<hostname>, OU=<Organization Unit>, O=<Organization>,  
L=<Location>, ST=<State>, C=<Country_Code>" -keyalg <Key Algorithm> -  
sigalg <Signature Algorithm> -keysize <key size> -validity <Number of  
Days> -keypass <Private key Password> -storepass <Store Password>
```

For example:

```
keytool -genkey -keystore AdminFlexcubeKeyStore.jks -alias FlexcubeCert  
-dname "CN=ofss00001.in.oracle.com, OU=OFSS, O=OFSS, L=Chennai, ST=TN,  
C=IN" -keyalg "RSA" -sigalg "SHA1withRSA" -keysize 2048 -validity 3650  
-keypass Password@123 -storepass Password@123
```

Note: CN=ofss00001.in.oracle.com is the Host Name of the weblogic server

### 3.2 Export Private Key as Certificate

```
keytool -export -v -alias <alias_name> -file  
<export_certificate_file_name_with_location.cer> -keystore  
<keystore_name.jks> -keypass <Private key Password> -storepass <Store  
Password>
```

For example:

```
keytool -export -v -alias FlexcubeCert -file AdminFlexcubeCert.cer -  
keystore AdminFlexcubeKeyStore.jks -keypass Password@123 -storepass  
Password@123
```

If successful the following message will be displayed :

```
Certificate stored in file < AdminFlexcubeCert.cer>
```

### 3.3 Import as Trusted Certificate

```
keytool -import -v -trustcacerts -alias rootcacert -file  
<export_certificate_file_name_with_location.cer> -keystore  
<keystore_name.jks> -keypass <Private key Password> -storepass <Store  
Password>
```

For example:

```
keytool -import -v -trustcacerts -alias rootcacert -file  
AdminFlexcubeCert.cer -keystore AdminFlexcubeKeyStore.jks -keypass  
Password@123 -storepass Password@123
```

## 3.4 Configuring Weblogic Console

After domain creation, follow the below steps to enable SSL in Weblogic Admin server and WLS\_FORMS Server.

1. Select Admin Server to enable SSL options

The screenshot shows the Oracle WebLogic Administration Console interface. On the left, there is a navigation pane with sections like 'Change Center', 'Domain Structure', 'How do I...', and 'System Status'. The main area displays the 'Summary of Servers' page, which includes a table of servers. The table has columns for Name, Cluster, Machine, State, Health, and Listen Port. The 'AdminServer' entry is highlighted with a red box.

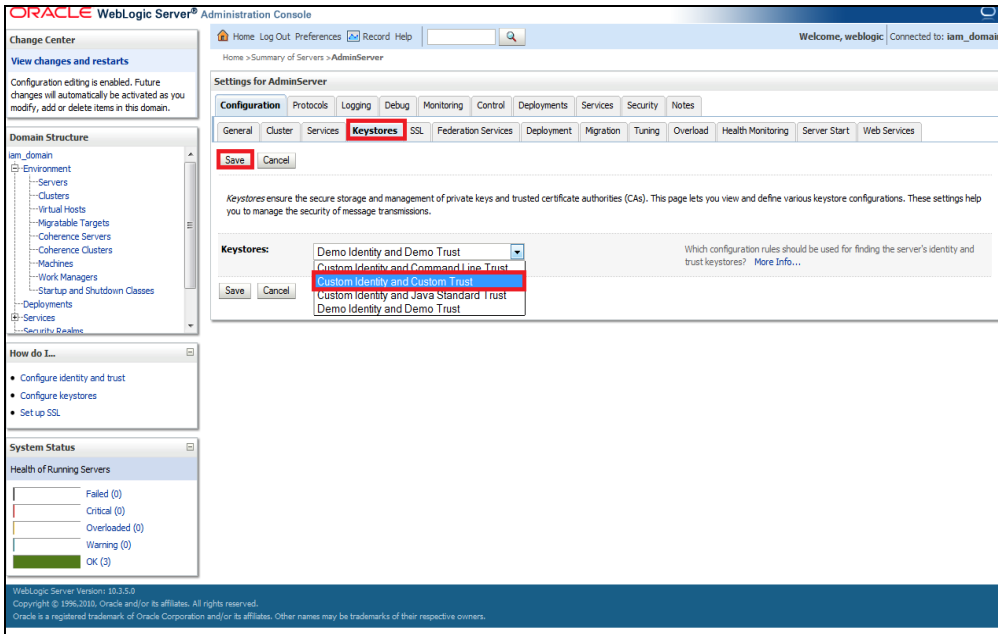
Name	Cluster	Machine	State	Health	Listen Port
AdminServer		whf00atkin.oracle.com	RUNNING	OK	7002
WLS_FORMS	cluster_forms	whf00atkin.oracle.com	RUNNING	OK	9002
WLS_REPORTS	cluster_reports	whf00atkin.oracle.com	SHUTDOWN		9003

2. Follow the steps in General Tab as shown below:
3. Select SSL Listen Port Enabled, Client Cert Proxy Enabled, Weblogic Plug-In Enabled.
4. Click on Save.

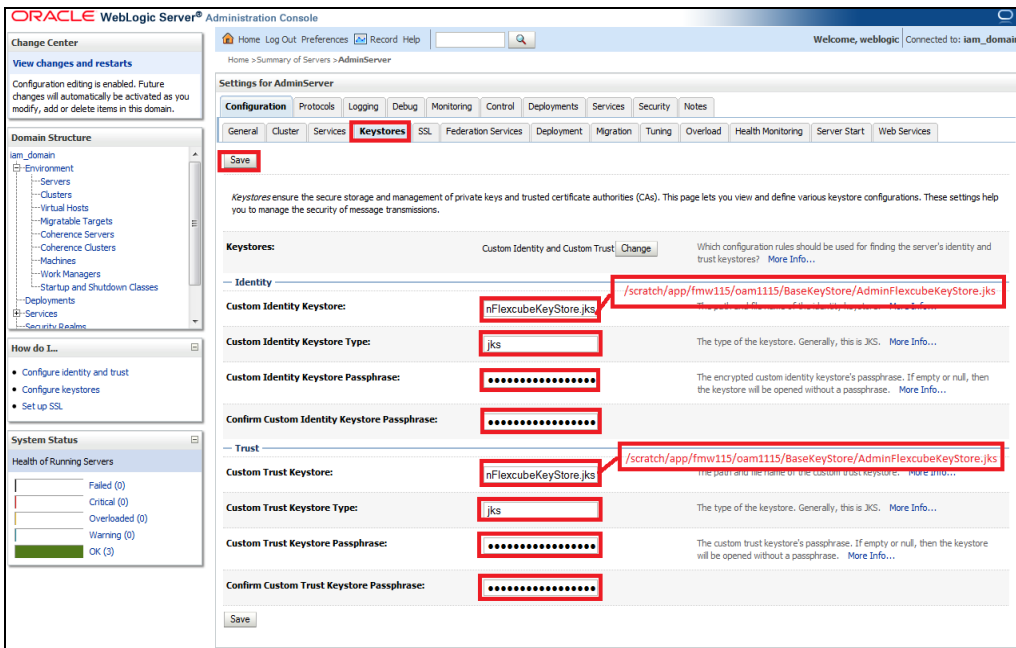
The screenshot shows the 'Configuration' page for the 'AdminServer' in the Oracle WebLogic Administration Console. The 'General' tab is selected, and the 'SSL' sub-tab is active. The 'Listen Port Enabled' and 'SSL Listen Port Enabled' checkboxes are checked. The 'Client Cert Proxy Enabled' checkbox is also checked. The 'Weblogic Plug-In Enabled' checkbox is checked. The 'Listen Port' is set to 7002, and the 'SSL Listen Port' is set to 14002. The 'Java Compiler' is set to 'javac', and the 'Diagnostic Volume' is set to 'Low'. The 'Virtual Machine Name' is set to 'ClassicDomain\_AdminServer'.

5. Modify Keystores Type as shown below:

- Click Change and select Keystores as Custom Identity and Custom Trust.
- Click on Save.



- Follow the steps in Keystores Tab as shown below:
- Enter Custom Identity Keystore and Custom Trust Keystore same as the Keystore Name created in step 1 with full path.
- Enter Custom Identity Keystore Type and Custom Trust Keystore Type as jks.
- Enter Custom Identity Keystore Passphrase, Confirm Custom Identity Keystore Passphrase, Custom Trust Keystore Passphrase and Confirm Custom Trust Keystore Passphrase same as the Store Password entered in step 1.
- Click on Save.



13. Follow the steps in SSL Tab as shown below:
14. Enter Private Key Alias as same as the alias name entered in step 2.
15. Enter Private Key Passphrase and Confirm Private Key Passphrase as same as the Private Key Password entered in step 2.
16. Change the Hostname Verification to None.
17. Click on Save.

The screenshot shows the 'Settings for AdminServer' page in the Oracle WebLogic Administration Console. The 'SSL' tab is active, and the 'Save' button is highlighted. The 'Private Key Alias' is set to 'FlexcubeCert'. The 'Private Key Passphrase' and 'Confirm Private Key Passphrase' fields are masked with asterisks. The 'Hostname Verification' is set to 'None'. The 'Custom Hostname Verifier' is set to 'None'. The 'Export Key Lifespan' is set to 500. The 'Use Server Certs' checkbox is unchecked.

18. Select WLS\_FORMS Server to enable SSL options
19. Repeat the steps performed in 4.2 to 4.5

The screenshot shows the 'Summary of Servers' page in the Oracle WebLogic Administration Console. The 'WLS\_FORMS' server is highlighted in the table, indicating it is running and has SSL enabled. The table shows the following servers:

Name	Cluster	Machine	State	Health	Listen Port
AdminServer(admin)		whf00atk.in.oracle.com	RUNNING	OK	7002
WLS_FORMS	cluster_forms	whf00atk.in.oracle.com	RUNNING	OK	9002
WLS_REPORTS	cluster_reports	whf00atk.in.oracle.com	SHUTDOWN		9003

Now the admin server and WLS\_FORMS servers are SSL enabled. Restart both the servers.

---

## 4. Java Based Encryption for User Password

1. Load the jar file `osdt_core.jar` into database using `loadjava` as shown below  
`loadjava -resolve -verbose -user lstest/lstest@fcubsls`  
`C:\Users\TEST\osdt_core.jar`
2. `osdt_core.jar` file can be taken from the forms installation server. It will be available in oracle home folder  
`/scratch/app/wl1036/Oracle_FRHome1/inventory/Scripts/ext/jlib`
3. Compile the java file `smpks_osdt.java` in the database from `svn`



---

## 5. Steps - Help files deployment

1. Place the .htm files at /fmwhome/help on appserver.
  - \* *fmwhome* is the fusion middleware home
  - example - .htm file were copied to /scratch/app/wl1036/help
2. Change permission mode to 777 for the help folder.
3. Create an alias for help folder's path in forms.conf located at /fmwhome/asinst\_1/config/OHS/ohs1/moduleconf

Example : In this example lsithelp is the alias name

# Added Alias name for help folder

```
RewriteRule ^/forms/registry/(.*) /workaroundregistry/$1 [PT]
```

```
AliasMatch ^/lsithelp/(.*) "/scratch/app/wl1036/help/$1"
```

Example :

```
27 # Added below Alias for help folder
28 # Added below Alias for help folder
29 RewriteRule ^/forms/registry/(.*) /workaroundregistry/$1 [PT]
30 AliasMatch ^/lsithelp/(.*) "/scratch/app/wl1036/help/$1"
31
32 <Location /forms>
33     SetHandler weblogic-handler
34     WebLogicCluster whf00atk.in.oracle.com:9002
35     DynamicServerList OFF
36 </Location>
37
```

4. Start the ohs server.
  - Command -
  - /fmwhome/asinst\_1/bin/opmnctl startall
  - \* *fmwhome* is the fusion middleware home.
5. Check the Help File port in the below file

/fmwhome/asinst\_1/config/FormsComponent/forms/FormsComponentInputProperties.xml  
Parameter: ohs\_port (http Port number on which the ohs server is running)

6. Help files will launch with this port

Example: '8888'

Execute the below command to check the port number.

```
/fmwhome/asinst_1/bin/opmnctl status -l
```

\* *fmwhome* is the fusion middleware home

Example:

```

[wl1036@whf00atk bin]$ ./opmnctl status -l
Processes in Instance: asinst_1
-----
ias-component | process-type | pid | status | uid | memused | uptime | ports
-----
emagent_asinst_1 | EMAGENT | 30786 | Alive | 1535316026 | 106152 | 289:54:32 | N/A
RptSrvr_whf00atk_asinst_1 | ReportServerComp- | 30789 | Alive | 1535316025 | 106152 | 289:54:32 | N/A
forms | FormsRuntime | 8653 | Alive | 1535316338 | 117712 | 0:16:01 | N/A
forms | FormsRuntime | 8647 | Alive | 1535316338 | 125604 | 0:16:02 | N/A
forms | FormsRuntime | 7227 | Alive | 1535316337 | 141628 | 0:25:14 | N/A
forms | FormsRuntime | 6808 | Alive | 1535316336 | 120304 | 0:29:14 | N/A
forms | FormsRuntime | 3695 | Alive | 1535316330 | 127172 | 1:04:10 | N/A
forms | FormsRuntime | 27580 | Alive | 1535316327 | 117804 | 2:42:19 | N/A
forms | FormsRuntime | 19224 | Alive | 1535316320 | 119832 | 20:47:38 | N/A
forms | FormsRuntime | 30358 | Alive | 1535316314 | 118692 | 24:36:56 | N/A
forms | FormsRuntime | 22620 | Alive | 1535316311 | 122236 | 26:01:01 | N/A
forms | FormsRuntime | 19946 | Alive | 1535316307 | 130140 | 26:26:46 | N/A
forms | FormsRuntime | 13726 | Alive | 1535316303 | 120868 | 27:43:35 | N/A
forms | FormsRuntime | 31501 | Alive | 1535316297 | 120696 | 30:48:43 | N/A
ohs1 | OHS | 30785 | Alive | 1535316024 | 215488 | 289:54:32 | https:8889,https:8890,http:8888
-----
[wl1036@whf00atk bin]$

```

7. Either launch the Oracle FLEXCUBE with this port '8888' or with existing port '9002' launch Oracle FLEXCUBE and then after Click on F1, change the port number in the help file URL and then check.

*Example:*

*<http://weblogicservername:9002/forms/frmservlet?config=lsdev>*

*<http://weblogicservername:8888/forms/frmservlet?config=lsdev>*

Note - Launching Oracle FLEXCUBE with ohs port is recommended.

8. Update SMTB\_CUBE\_PARAM following param\_name with below values

- Param\_name IMPLI\_TYPE param\_value 9U
- Param\_name HELP\_PATH param\_value ls!thelp \*
- Param\_name HELPMODE param\_value WEBHELP

\* ls!thelp is the alias name of path /scratch/app/wl1036/help





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Oracle Financial Services Software Limited  
Oracle Park  
Off Western Express Highway  
Goregaon (East)  
Mumbai, Maharashtra 400 063  
India

Worldwide Inquiries:  
Phone: +91 22 6718 3000  
Fax: +91 22 6718 3001  
[www.oracle.com/financialservices/](http://www.oracle.com/financialservices/)

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