

# Oracle FLEXCUBE Direct Banking

Mobile Enabler

IBM WebSphere 6.1 Installation Manual

Release 12.0.3.0.0

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**ORACLE®**

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# Preface

## 1.1 Intended Audience

This document is primarily targeted at

- Architecture and Design Teams within Oracle FLEXCUBE Direct Banking
- Development Teams
- Implementation Teams
- Implementation Partners

## 1.2 Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

## 1.3 Access to OFSS Support

<https://support.us.oracle.com>

## 1.4 Structure

This manual is organized into the following categories:

Preface gives information on the intended audience. It also describes the overall structure of the User Manual

Abbreviations provides details of abbreviations used in document.

Overview and rest explains deployment and configuration of Oracle FLEXCUBE Direct Banking ME on IBM Websphere

## 1.5 Related Information Sources

For more information on Oracle FLEXCUBE Direct Banking Release 12.0.3.0.0, refer to the following documents:

Oracle FLEXCUBE Direct Banking Licensing Guide

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## 2. Abbreviations

FCDB	Oracle FLEXCUBE Direct Banking
HTTP	Hyper Text Transfer Protocol
J2EE	Java 2 Enterprise Edition
WAS	IBM WebSphere Application Server
FCDBME BASE DIR	FCDB Mobile Enabler Base Working Directory
ME	Mobile Enabler
TGT App	Target Internet Banking Application (for e.g. 2.9.X)

---

## 3. Overview

This document discusses following topics

- Deploying FCDB ME Application on IBM WAS 6.1
- Creation of WebSphere DB entities

### 3.1 Structure

---

This document consists of the following chapter

**Chapter 3, "Pre-requisites"**

This chapter discusses the necessary installations/requirements prior to deployment on IBM WAS.

**Chapter 4, "Application Server Configuration"**

This chapter discusses configuration of application server, creation of instance of IBM WAS 6.1

**Chapter 5, "Deploying Application"**

This chapter discusses the steps to be followed to deploy the application modules on IBM WAS 6.1

**Chapter 6, "Setup JDBC Data Source and Connection Pooling"**

The steps for JDBC Data source creation and Connection Pool creation are discussed in this chapter.

**Chapter 10, "Appendix"**

All the miscellaneous issues, for reference purpose can be found in this section.

---

## 4. Pre- requisites

1. IBM WebSphere v6.1 must be installed on the system.
2. Oracle Flexcube Direct Banking Mobile Enabler Application is installed using Oracle FCDB ME Installer.
3. The document expects the user to have fair knowledge of application deployment on IBM Websphere. The document only explains deployment and configuration of Oracle FLEXCUBE Direct Banking ME on IBM Websphere; IBM Websphere documentation should be referred for details on IBM Websphere.

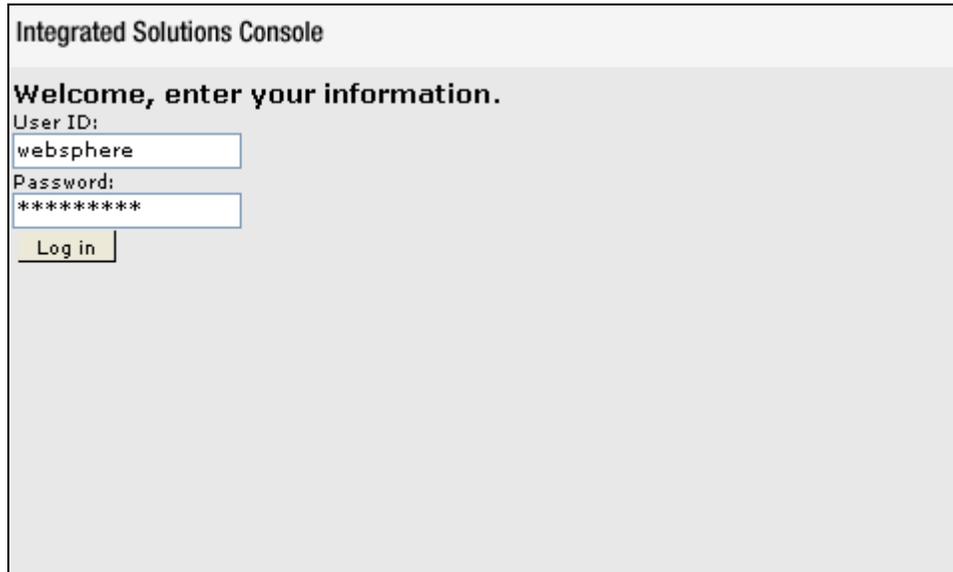
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## **5. Application Server Configuration**

## a. Creating and Managing a Server Instance

Perform following steps for creating the WAS instance.

- 1) Go to the Admin console
- 2) Enter User Id as "WEBSHERE".



Integrated Solutions Console

Welcome, enter your information.

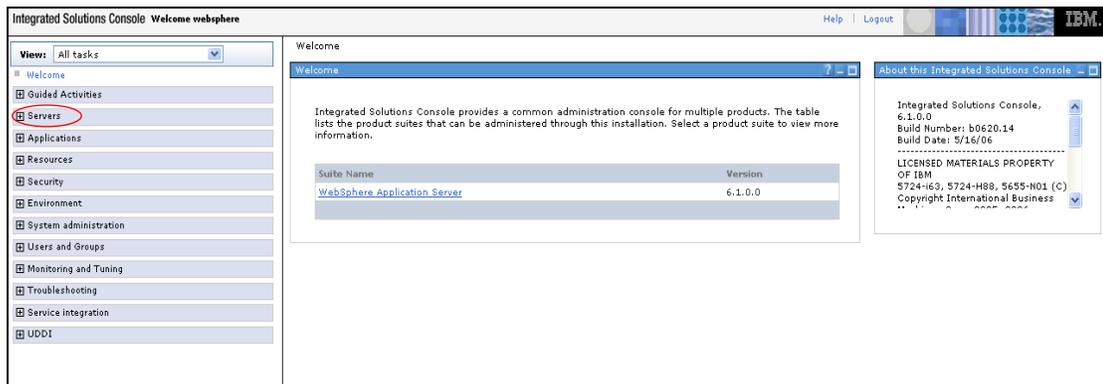
User ID:  
websphere

Password:  
\*\*\*\*\*

Log in

Figure 4.1.1

- 3) Following Menu will be displayed.



Integrated Solutions Console Welcome websphere

View: All tasks

- Welcome
- Guided Activities
- Servers**
- Applications
- Resources
- Security
- Environment
- System administration
- Users and Groups
- Monitoring and Tuning
- Troubleshooting
- Service integration
- UDDI

Welcome

Integrated Solutions Console provides a common administration console for multiple products. The table lists the product suites that can be administered through this installation. Select a product suite to view more information.

Suite Name	Version
<a href="#">WebSphere Application Server</a>	6.1.0.0

About this Integrated Solutions Console

Integrated Solutions Console,  
6.1.0.0  
Build Number: b0620.14  
Build Date: 5/16/06

LICENSED MATERIALS PROPERTY  
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5724-I63, 5724-H88, 5655-N01 (C)  
Copyright International Business

Figure 4.1.2

- 4) Go to Servers -> Application servers.  
Click on the server to be configured from the list. Screen as displayed in *Figure 4.1.3* will appear.

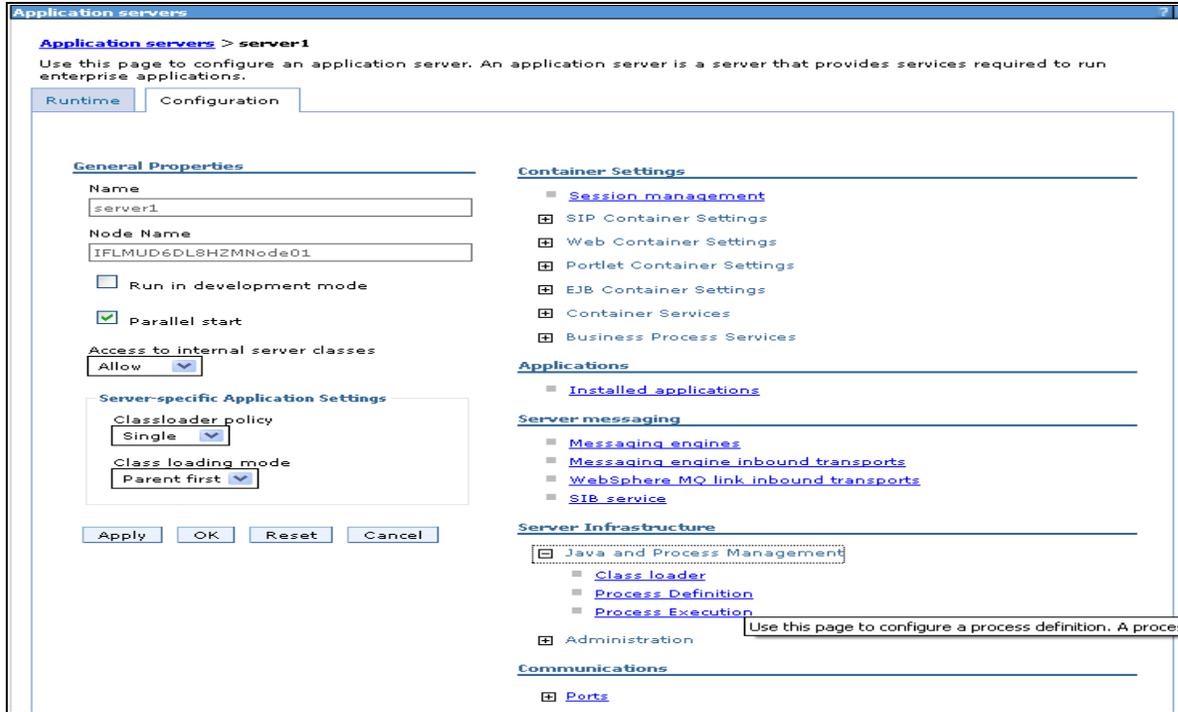


Figure 4.1.3

5) Select "single" as classloader policy. Click Apply.

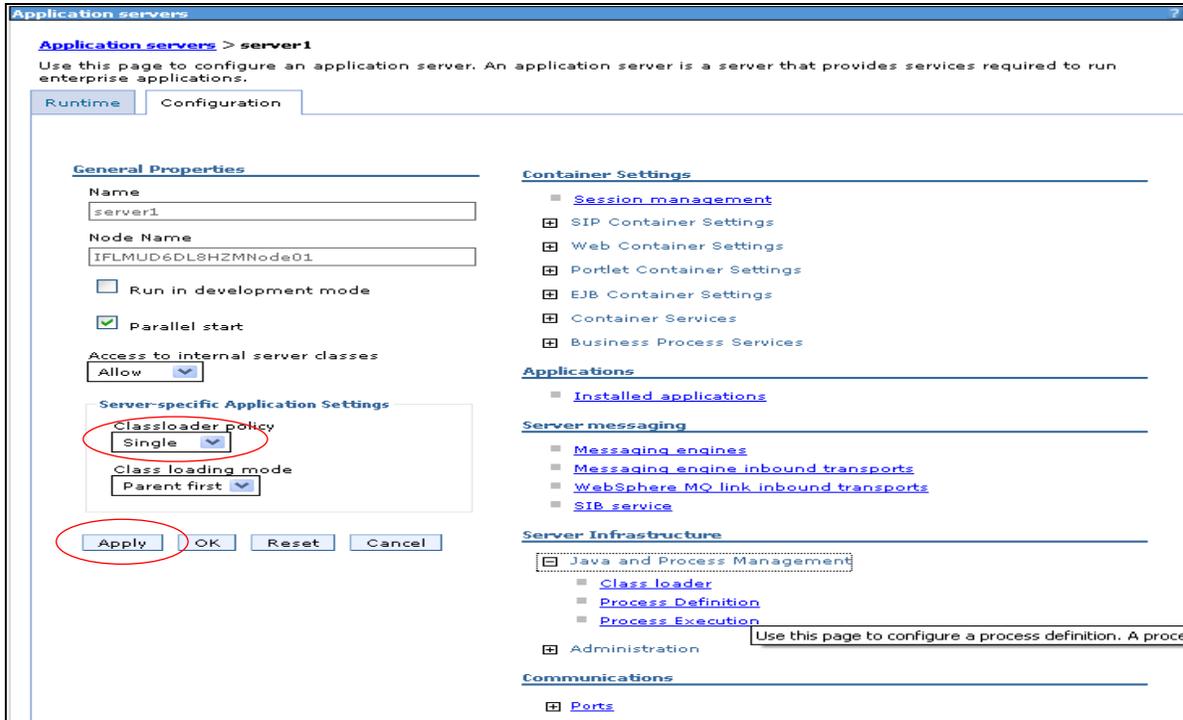


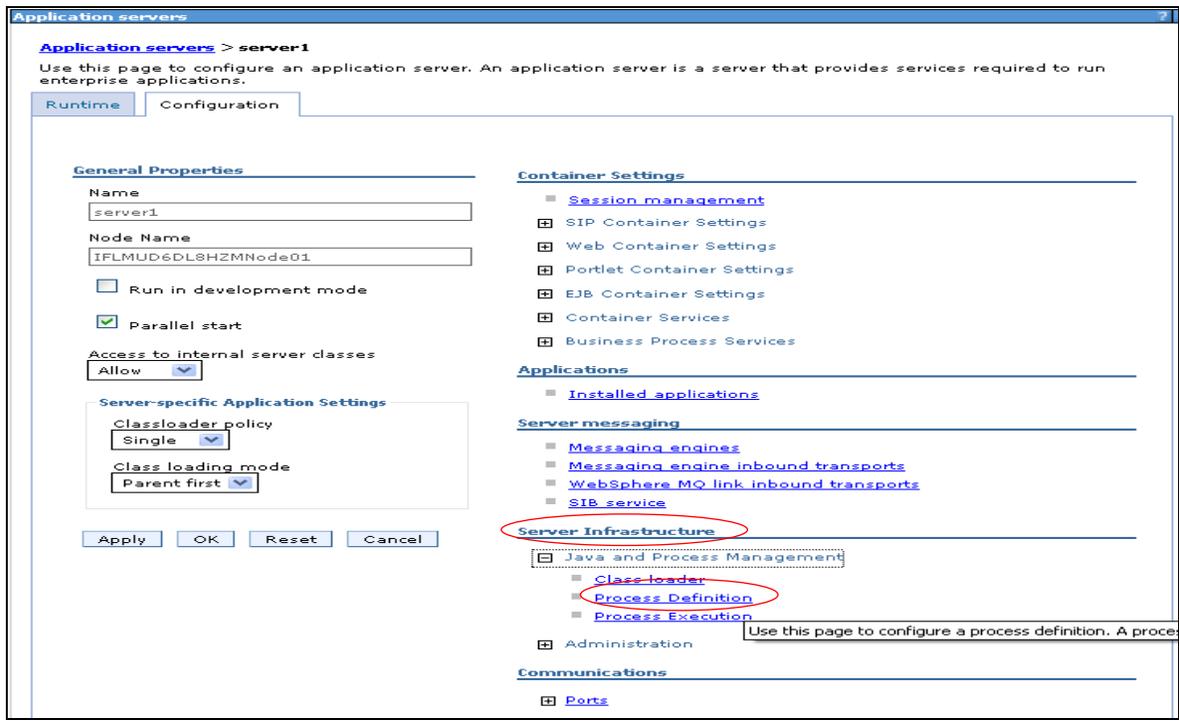
Figure 4.1.4

- 6) On the same screen, find “Port” section, expand the same to find WC\_defaulthost port (termed as default host port in document). Note down the port for later use.

The screenshot shows the IBM Integrated Solutions Console interface. The left sidebar contains a navigation tree with categories like Servers, Applications, Resources, Security, Environment, System administration, Users and Groups, Monitoring and Tuning, Troubleshooting, Service integration, and UDDI. The main content area displays the 'Ports' section under 'Communications'. A table lists various ports and their corresponding addresses. The 'WC\_defaulthost' port is circled in red, indicating its port number is 9080.

Port Name	Port	Details
BOOTSTRAP_ADDRESS	2809	
SOAP_CONNECTOR_ADDRESS	8880	
SAS_SSL_SERVERAUTH_LISTENER_ADDRESS	9401	
CSIV2_SSL_SERVERAUTH_LISTENER_ADDRESS	9403	
CSIV2_SSL_MUTUALAUTH_LISTENER_ADDRESS	9402	
WC_adminhost	9060	
WC_defaulthost	9080	
DCS_UNICAST_ADDRESS	9353	
WC_adminhost_secure	9043	
WC_defaulthost_secure	9443	
SIP_DEFAULTHOST	5060	
SIP_DEFAULTHOST_SECURE	5061	
SIB_ENDPOINT_ADDRESS	7276	
SIB_ENDPOINT_SECURE_ADDRESS	7286	
SIB_MQ_ENDPOINT_ADDRESS	5558	
SIB_MQ_ENDPOINT_SECURE_ADDRESS	5578	
ORB_LISTENER_ADDRESS	9100	

- 7) On the same Screen, locate section “Server Infrastructure”, expand the option “Java and Process Management” and click on the link “Process Definition”.



- 8) On the “Process Definition” screen, click on the link “Java Virtual Machine”

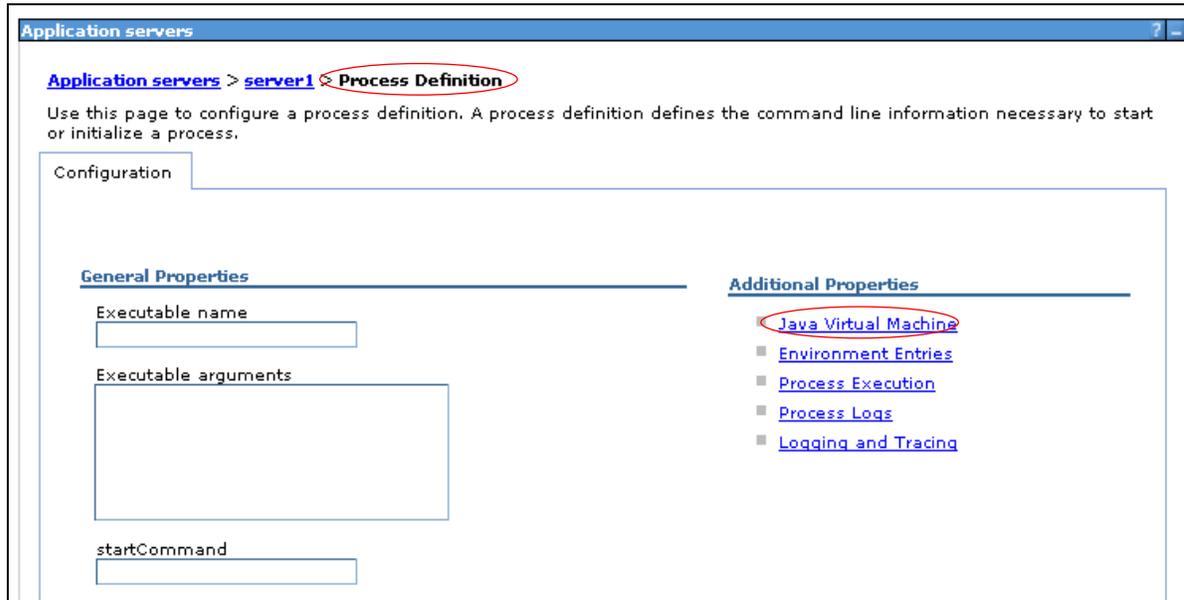


Figure 4.1.5

- 9) On the “Java Virtual Machine” screen, click on “Configuration” tab and then click on the link “Custom properties”.

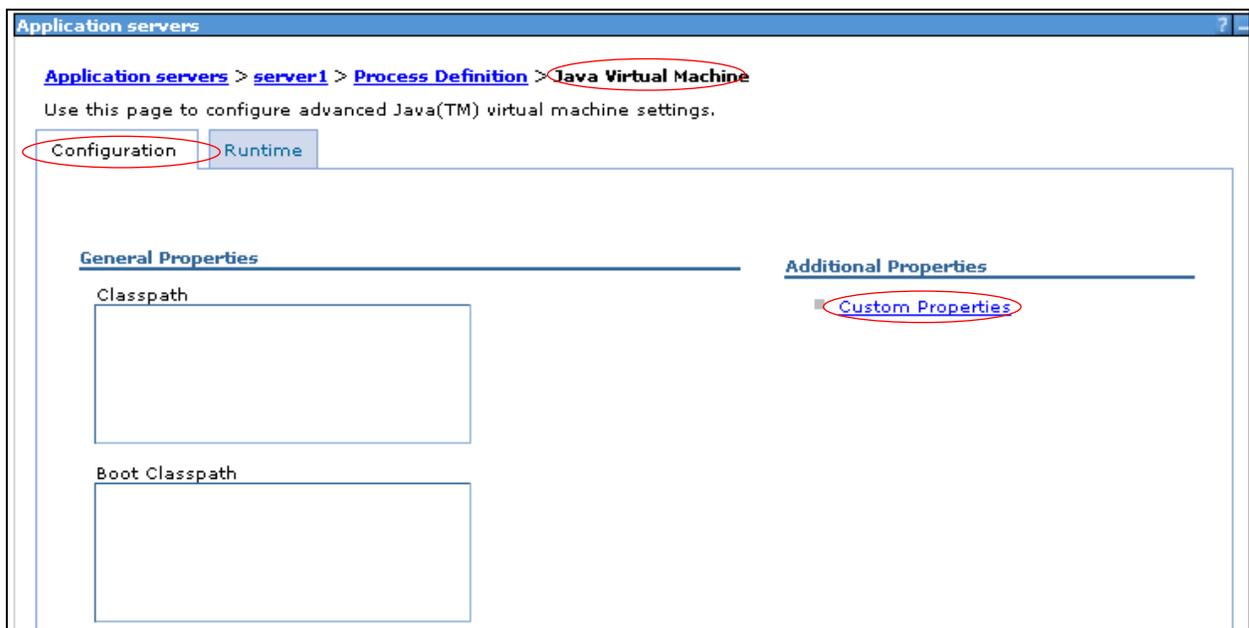


Figure 4.1.6

10) On the “Custom Properties” screen, click on “New” to configure a new custom property.

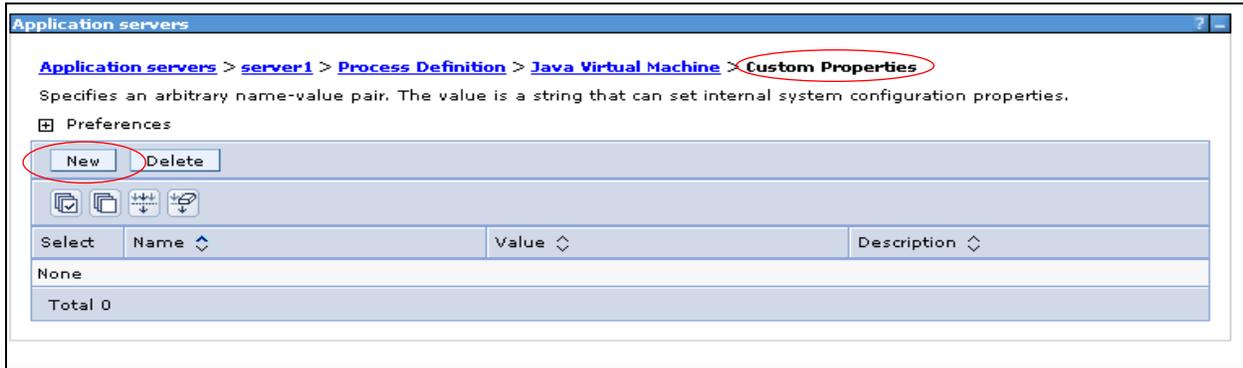


Figure 4.1.7

11) Add the property name, value and click “OK”.



Figure 4.1.8

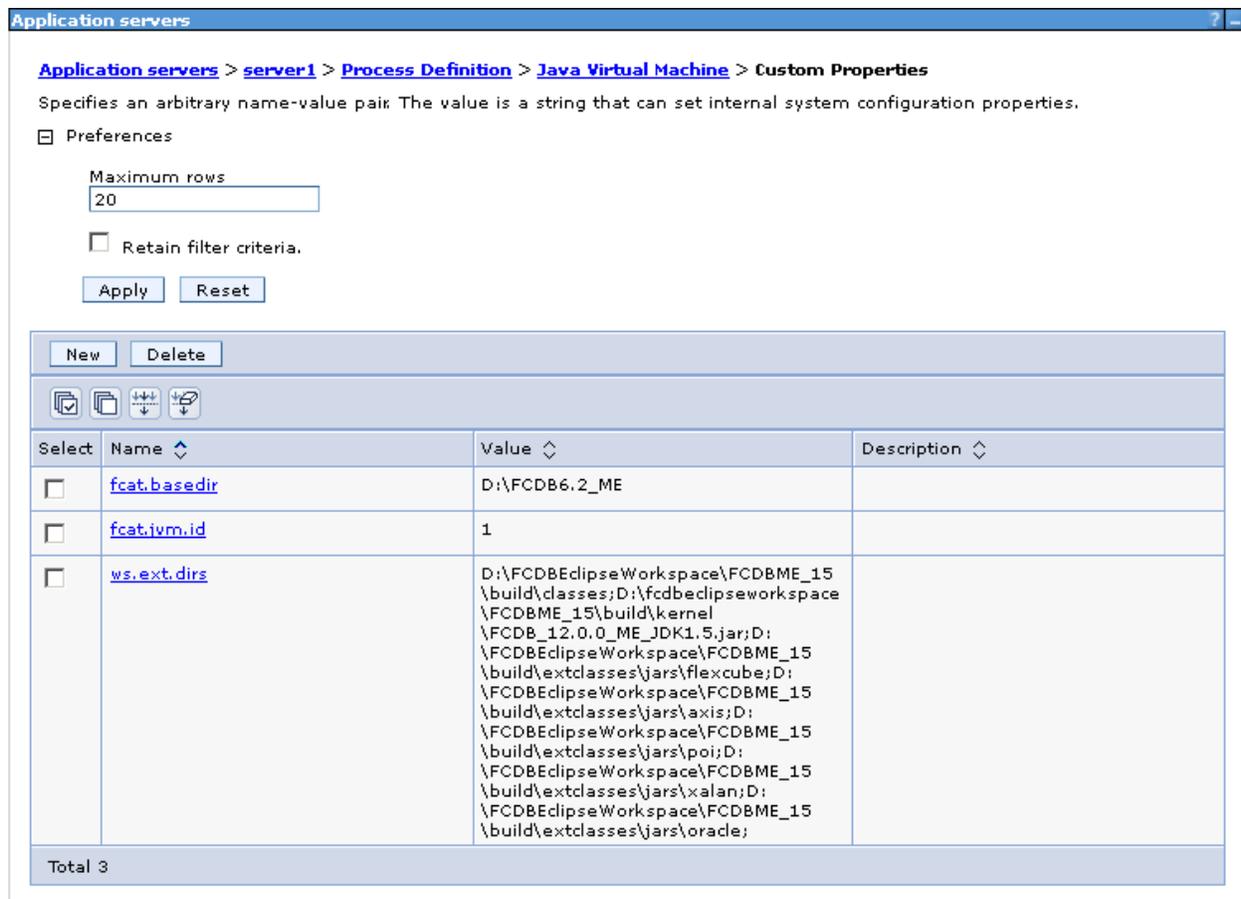


Figure 4.1.9

12) Add all below mentioned properties by following steps 11 - 12.

Property Name	Value	Explanation
fcat.jvm.id	A unique number.	This unique number identifies the server amongst all the cluster members.
fcat.basedir	<FCDBME BASE DIR>	Path to the base folder containing FCDBME application on file system. E.g.: D:\FCDBME
fcat.propfile.isencr	true/false	This property indicates the properties file's encryption status. Set as 'true' if files are encrypted, else set as 'false'.  The property files are not encrypted when installed but needs to be explicitly encrypted using FCDB tool provided. Please refer <a href="#">Encryption and Decryption of Property Files</a>
ws.ext.dirs	E.g.: d:\fcdbme\system\build\kernel;d:\fcdbme\system\build\extclasses\jars\axis; d:\fcdbme\system\build\extclasses\jars\flexcube;d:\fcdbme\system\build\extclasses\jars\ibm; d:\fcdbme\system\build\extclasses\jars\xalan;	Path to all folders holding application relevant jar files. Folders are “;” colon separated for Windows OS. Folders are “:” colon separated for Linux/Unix OS.  Following folder should be added: <FCDBME BASE DIR>/system/build/kernel And all subdirectories under folder <FCDBME BASE DIR>/system/build/extclasses/jars. Please Note that the kernel jar should precede all the external jars

13) After above steps are completed, save the configuration changes by clicking on the “Save” link on the top of the screen.

14) Since all the configurations of IBM Websphere application server are XML files, the server uses xalan parser to parse the configuration files. However Oracle FLEXCUBE Direct Banking Mobile Enabler application uses oracle parser for reporting module and hence is added to the classpath. This results in the server failing to parse its configuration files and hence failing to start. Please update following property as remedy:

- Locate the jre folder present in the application server installation folder. Usually <IBM Websphere Installation folder>\AppServer\java\jre\lib
- In the above folder locate a file jaxp.properties or jaxp.properties.template. If template file is present, rename it to jaxp.properties.
- Edit the file jaxp.properties and uncomment the javax.xml.\* properties. Hence following properties should now be present in the properties file.

```
javax.xml.transform.TransformerFactory=org.apache.xalan.processor.TransformerFactoryImpl
javax.xml.xpath.XPathFactory=org.apache.xpath.jaxp.XPathFactoryImpl
javax.xml.parsers.SAXParserFactory=org.apache.xerces.jaxp.SAXParserFactoryImpl
javax.xml.parsers.DocumentBuilderFactory=org.apache.xerces.jaxp.DocumentBuilderFactoryImpl
```

- Restart the server.

## b. Creating virtual host for Web Application

This section is not mandatory. In case FCDB ME is to be setup on the “default\_host”, this section can be skipped.

① Please refer to IBM Websphere documents to find details on virtual host and default host.

- 1) Click Administrative Console → Environment → Virtual Hosts

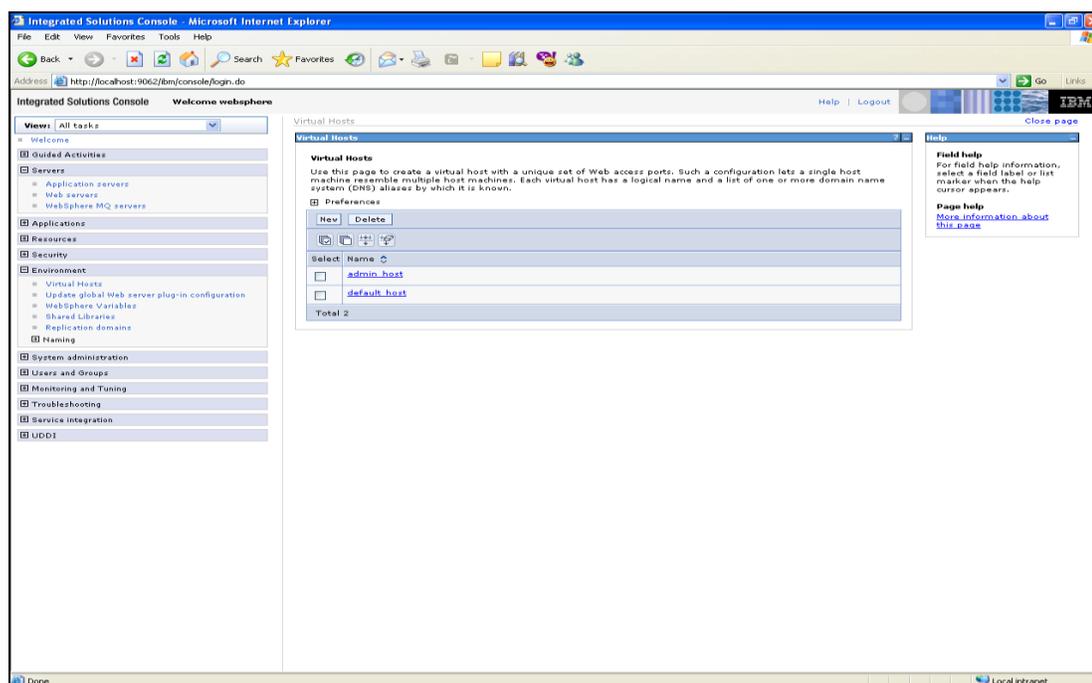


Figure 4.2.1

- 2) Click on New button. Enter the Virtual Host Name (e.g. FCDBME)

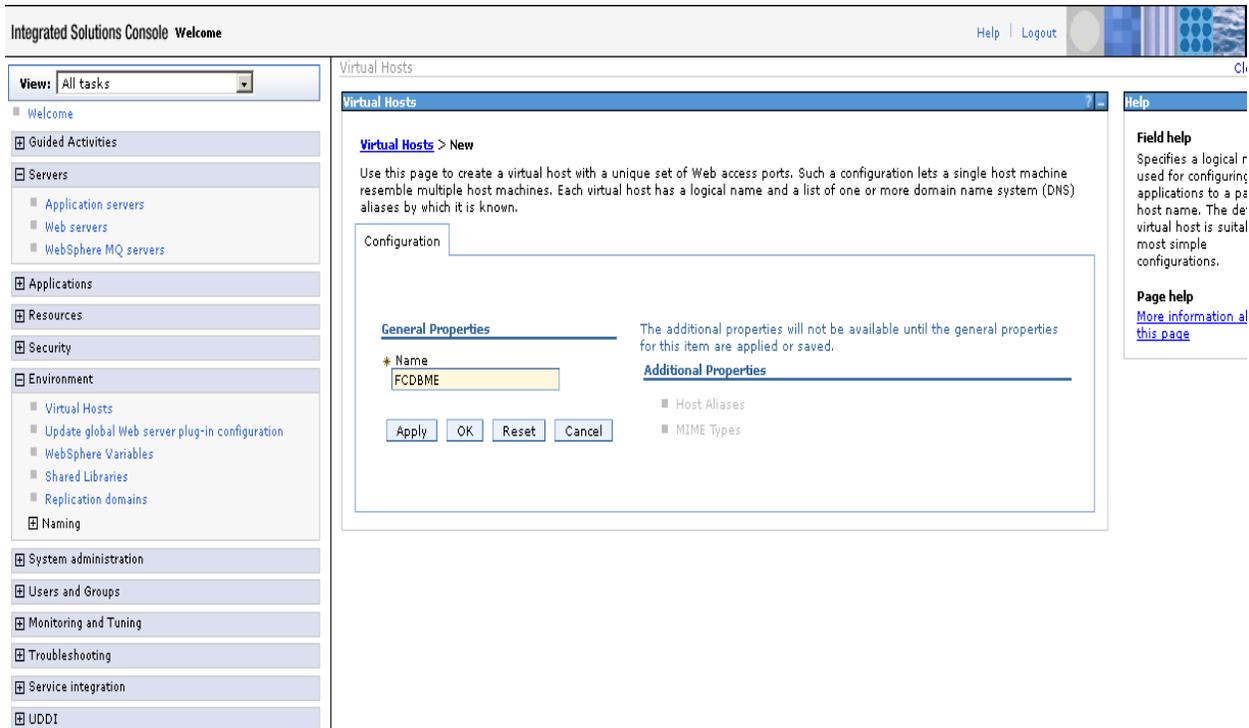


Figure 4.2.2

3) Click Apply

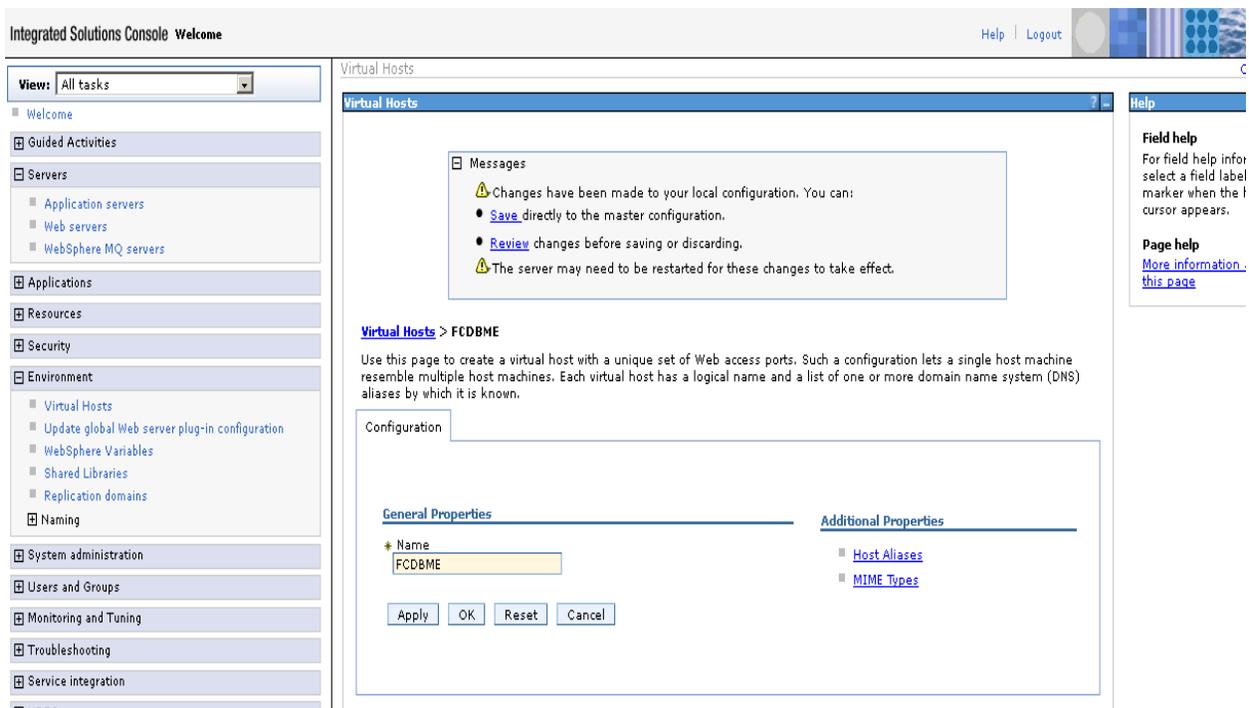


Figure 4.2.3

4) Click "Host Aliases"

Integrated Solutions Console Welcome Help | Logout

View: All tasks

- Welcome
- Guided Activities
- Servers
  - Application servers
  - Web servers
  - WebSphere MQ servers
- Applications
- Resources
- Security
- Environment
  - Virtual Hosts
  - Update global Web server plug-in configuration
  - WebSphere Variables
  - Shared Libraries
  - Replication domains
- Naming
- System administration
- Users and Groups
- Monitoring and Tuning
- Troubleshooting
- Service integration
- UDDI

Virtual Hosts

Messages

⚠ Changes have been made to your local configuration. You can:

- [Save](#) directly to the master configuration.
- [Review](#) changes before saving or discarding.

⚠ The server may need to be restarted for these changes to take effect.

[Virtual Hosts](#) > [ECDBME](#) > [Host Aliases](#)

Use this page to edit, create, or delete a domain name system (DNS) alias by which the virtual host is known.

Preferences

Maximum rows:

Retain filter criteria.

Select	Host Name	Port
None		
Total 0		

Help

**Field help**  
For field help information, select a field label or list marker when the help cursor appears.

**Page help**  
[More information about this page](#)

**Command Assistance**  
[View administrative scripting command for last action](#)

Figure 4.2.5

5) Click "New" button

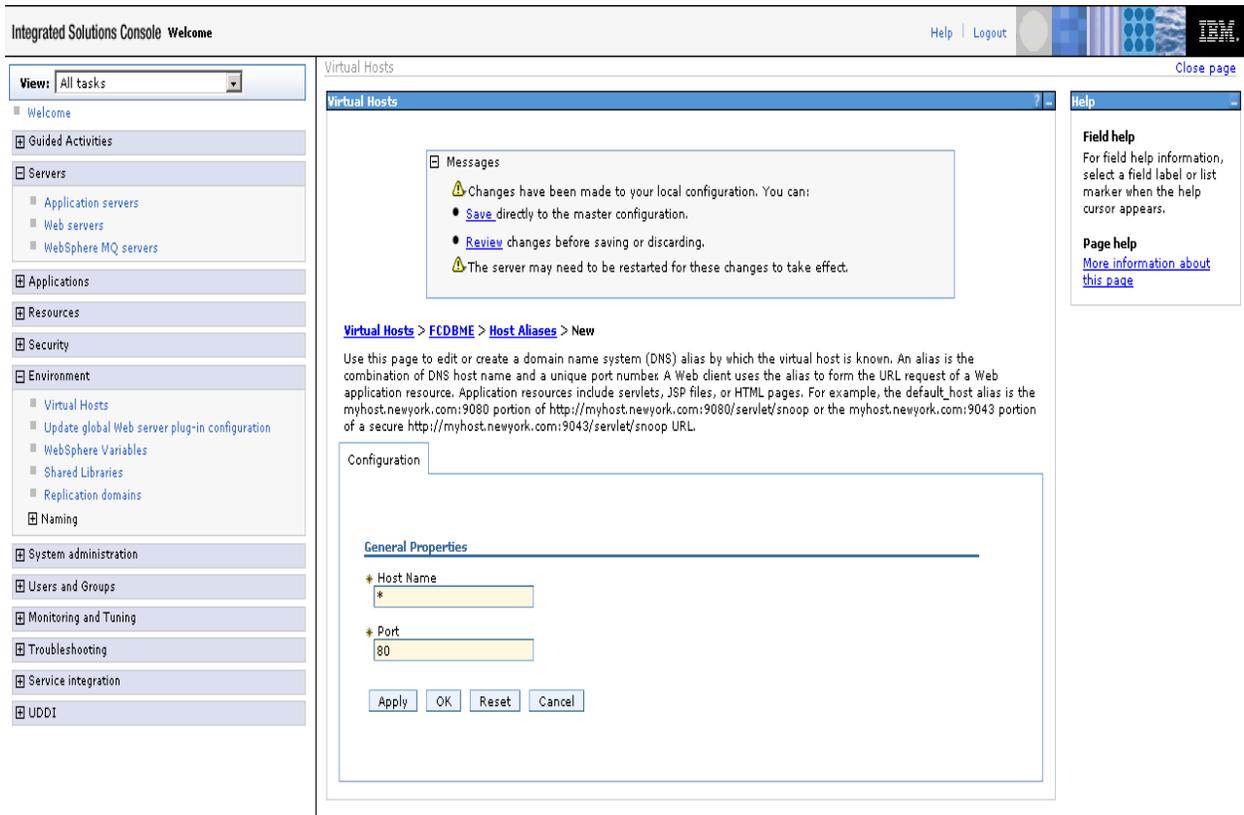


Figure 4.2.6

6) Add following host aliases (noted as default host port earlier)

Integrated Solutions Console **Welcome** Help | Logout

View: All tasks

- Welcome
- Guided Activities
- Servers
  - Application servers
  - Web servers
  - WebSphere MQ servers
- Applications
- Resources
- Security
- Environment
  - Virtual Hosts
  - Update global Web server plug-in configuration
  - WebSphere Variables
  - Shared Libraries
  - Replication domains
- Naming
- System administration
- Users and Groups
- Monitoring and Tuning
- Troubleshooting
- Service integration
- UDDI

Virtual Hosts Close page

Messages

- ⚠ Changes have been made to your local configuration. You can:
  - [Save](#) directly to the master configuration.
  - [Review](#) changes before saving or discarding.
- ⚠ The server may need to be restarted for these changes to take effect.

[Virtual Hosts](#) > [ECDBME](#) > [Host Aliases](#) > \*

Use this page to edit or create a domain name system (DNS) alias by which the virtual host is known. An alias is the combination of DNS host name and a unique port number. A Web client uses the alias to form the URL request of a Web application resource. Application resources include servlets, JSP files, or HTML pages. For example, the default\_host alias is the myhost.newyork.com:9080 portion of http://myhost.newyork.com:9080/servlet/snoop or the myhost.newyork.com:9043 portion of a secure http://myhost.newyork.com:9043/servlet/snoop URL.

Configuration

---

**General Properties**

\* Host Name  
\*

\* Port  
9080

Help

**Field help**  
For field help information, select a field label or list marker when the help cursor appears.

**Page help**  
[More information about this page](#)

Figure 4.2.7

- 7) Click Apply
- 8) Click Save/OK

---

## **6. Deploying Applications**

---

## 5.1 Application Deployment

### Web Application Deployment

Following section explains deploying Web application on IBM Websphere. For details and different options of deployment refer to documentations provided by IBM WebSphere.

These steps should be carried out for **B001.war** FCDB ME web application mentioned below.

Deployable	Suggested Context	Path Location	Description
B001.war	B001	< FCDBME BASE DIR>\deploy	Application for Bank entity B001. This is available only for Base release.

- 
- 1) Go to Admin Console. On the left Menu expand option “Applications” and click on the link “Install new Applications”



Figure 5.1

- 2) Screen as shown in below figure will appear. On the screen, click “Browse” button and browse to the web application deployable. Add a context identifier in the field “Context root”. Select the option “Prompt me only when additional information is required”. Click “Next” button.

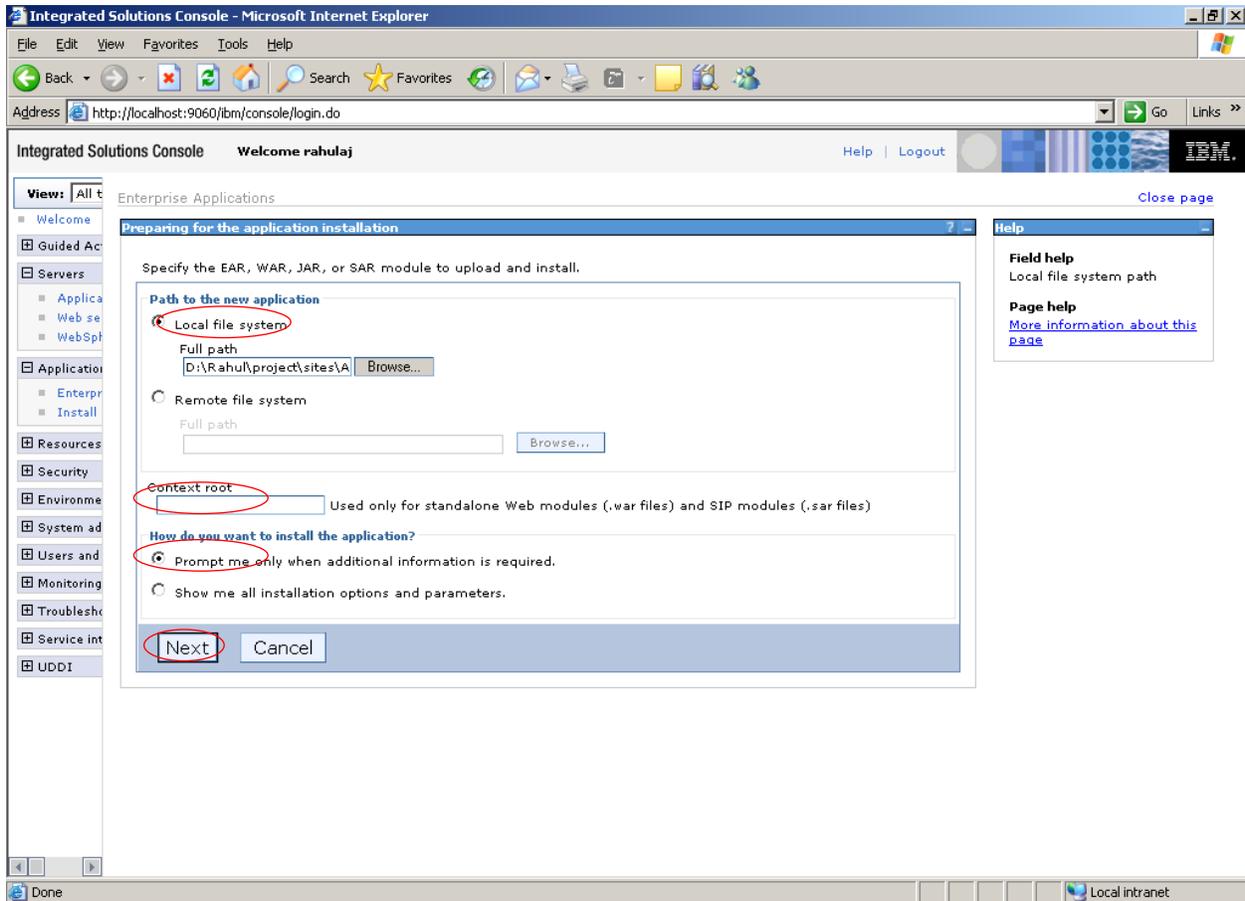


Figure 5.2

3) On the Screen as shown in figure below, change the application name if required and click “Next”.

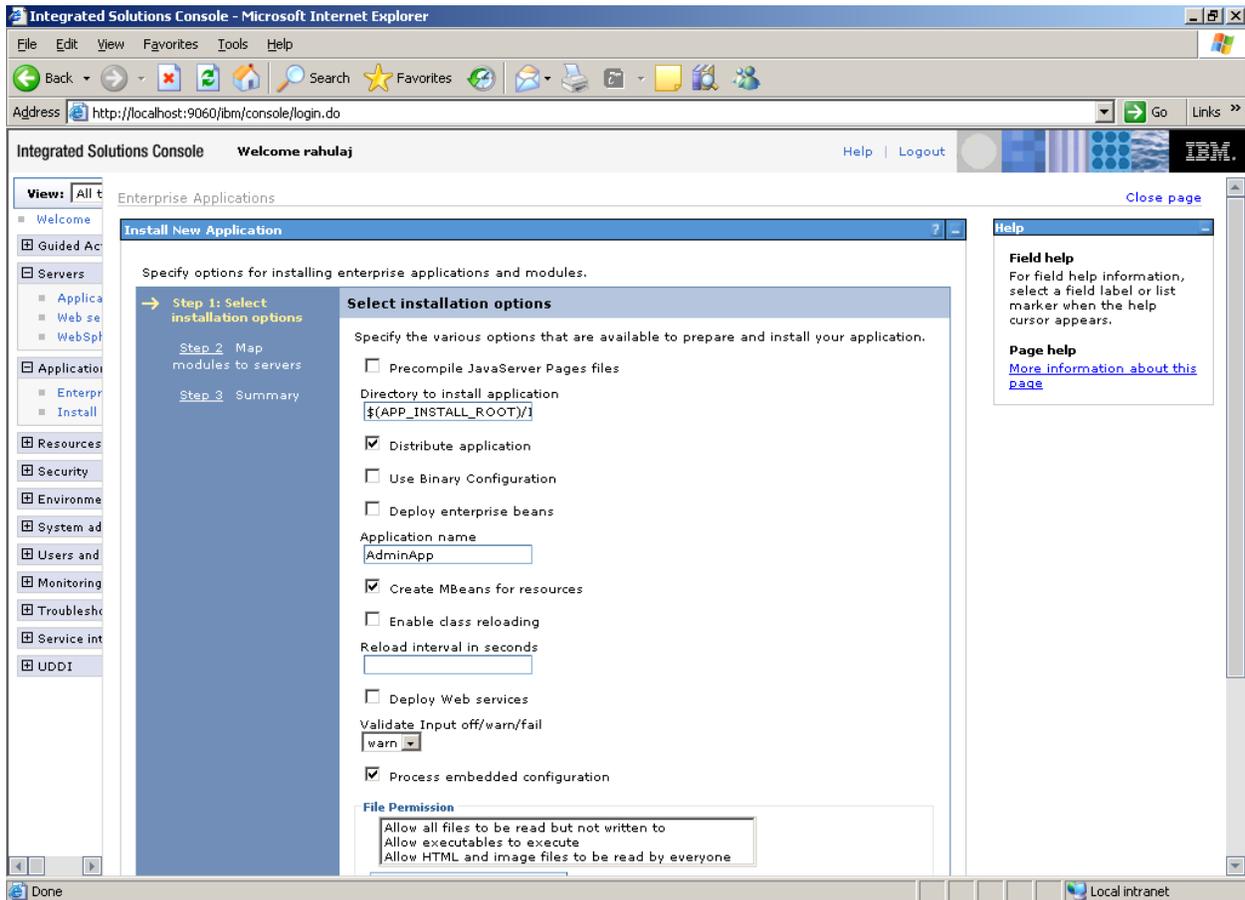
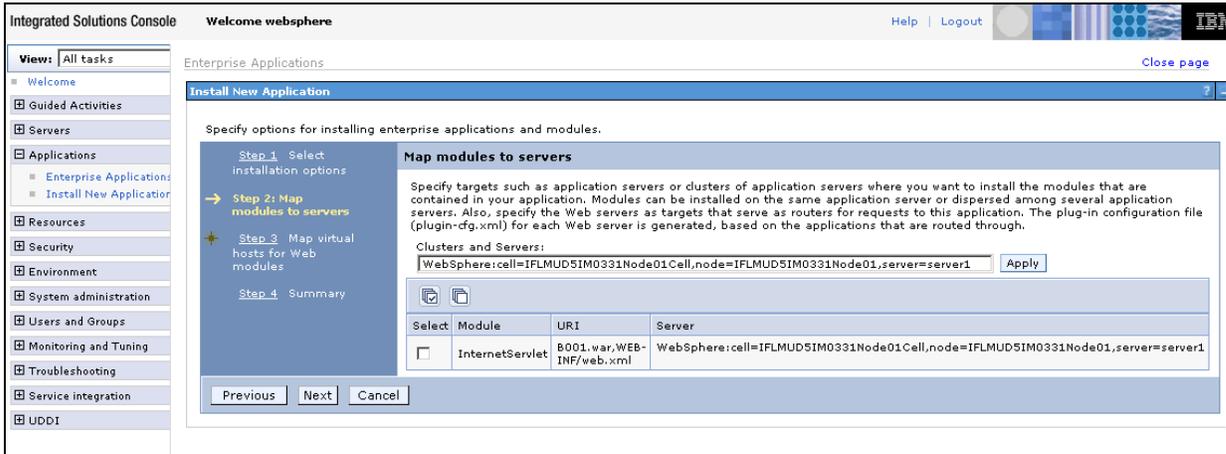
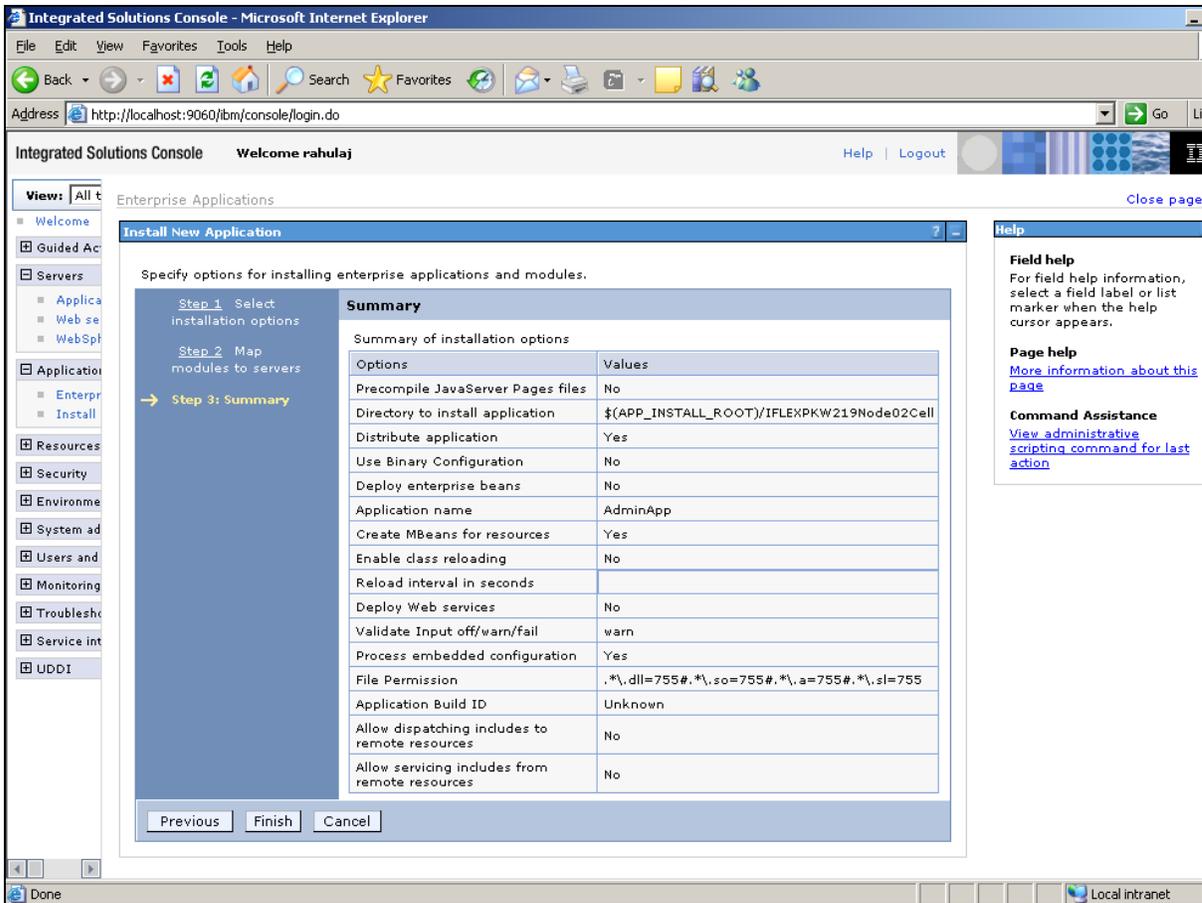


Figure 5.4

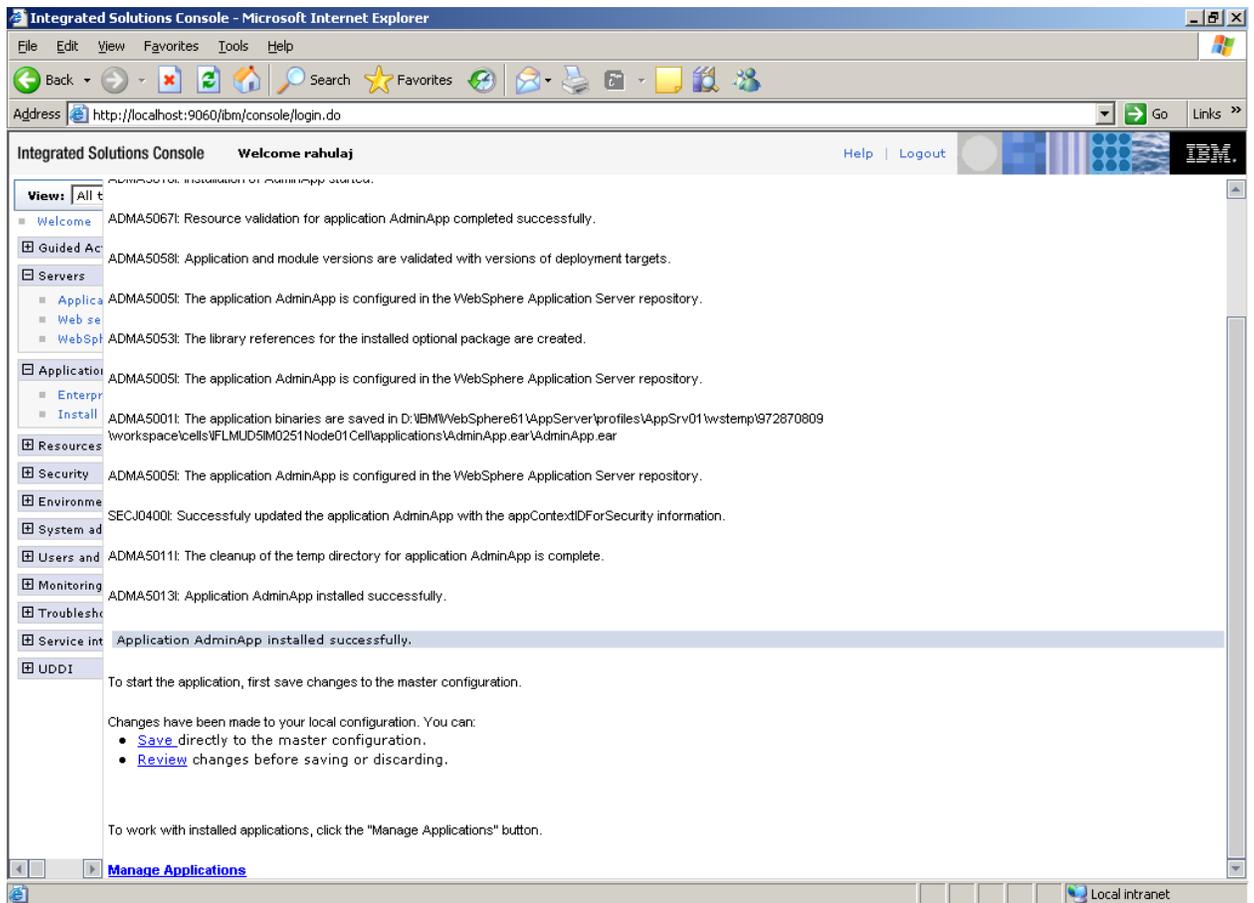
4) On the Screen as shown in figure below, Map the web module to expected server. Click “Next”.



5) Summary page will appear with selected installation options, review the same and click “Finish” to begin with installation of the web application.



- 6) Screen as shown in below figure will appear, detailing the status of the installation. On successful installation, click “Save” to complete the deploy application process.



---

## 5.2 Deploying MobileEnabler Web App

After completing the setup for FCDB ME server instance and deploying the B001.war, one need to deploy “MobileEnabler.war” in the “TGT App server” instance i.e. one need to add a new web app MobileEnabler.war in their existing internet Banking server instance.

Deployable	Suggested Context	Path Location	Description
MobileEnabler.war	/MobileEnabler	<FCDBME BASE DIR>\MobileEnabler/TGT_App_deployment/2.9.X	This application to be deployed in TGT App server environment.

After successful deployment of this war file one need to update the URL of this app in FCDB ME environment setup. Property file “mobileenabler.properties” located at “<FCDBME BASE DIR>\system\home>” needs to be updated. Following parameter in this file needs to be updated

TGT.APP.INVOCATION.URL = http://<<IP Address of TGT App>>:<<PortNo>>/MobileEnabler/mobile

---

## **7. Setup JDBC Datasource and Connection Pooling**

## a. Create Connection Pool

To create JDBC providers:

- 1) Admin Console: Click Resources → JDBC Provider.
- 2) Select the scope for the new JDBC Provider to be created.  
Select “Node=<node name>, Server=<server name>”

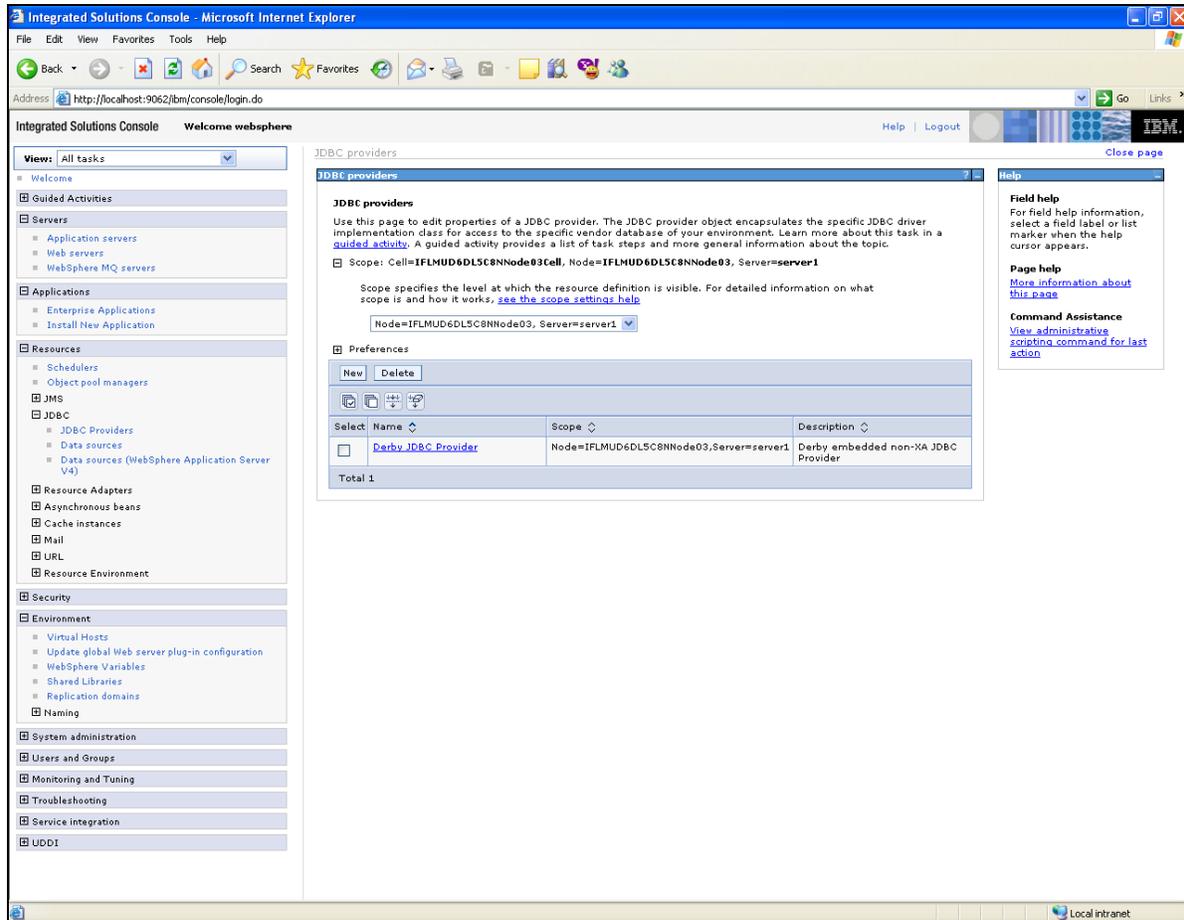


Figure 6.1.1

- 3) Click New.

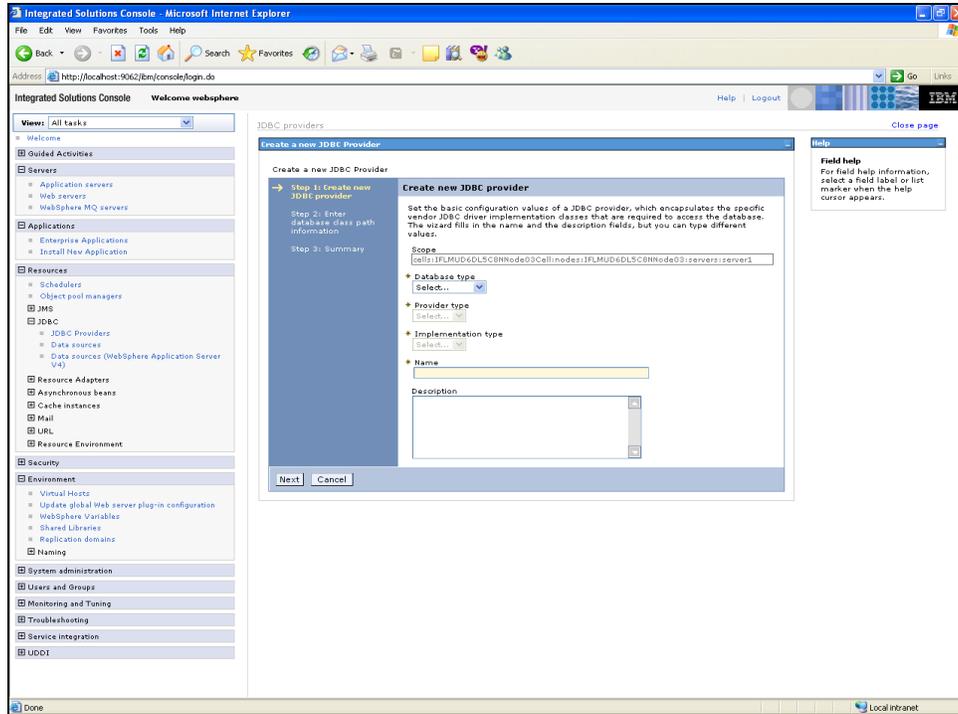


Figure 6.1.2

- 4) Select database type as Oracle
- 5) Select the provider type as Oracle JDBC Driver
- 6) Select the implementation type as Connection pool data source

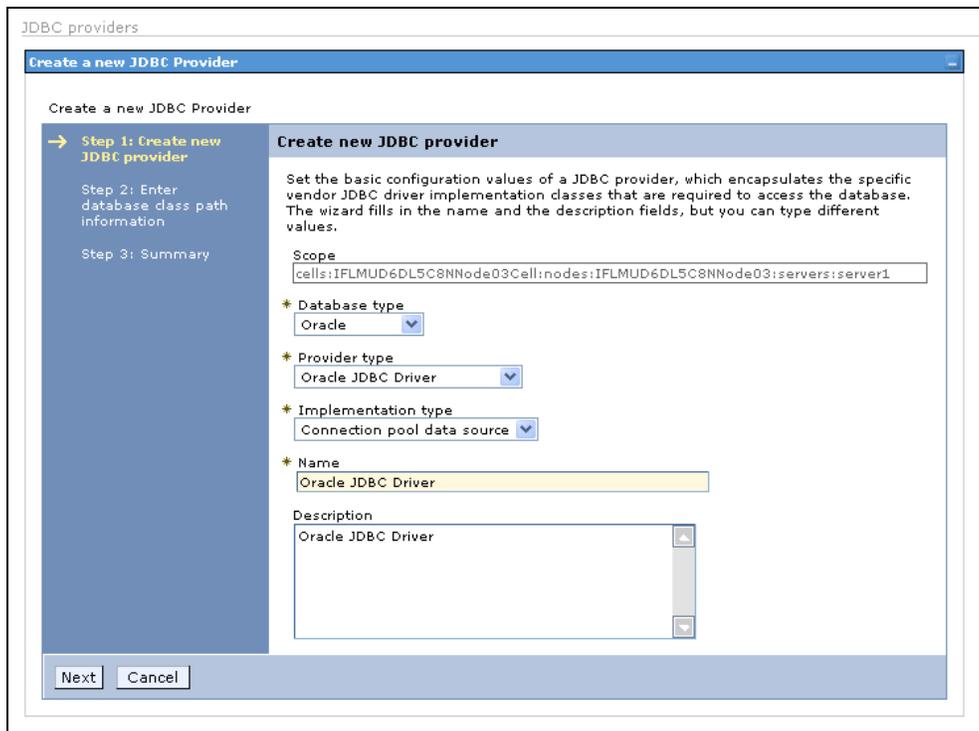


Figure 6.1.3

7) Click Next.

8) Enter the directory location as <FCDBME BASE DIR>\system\build\extclasses\jars\oracle

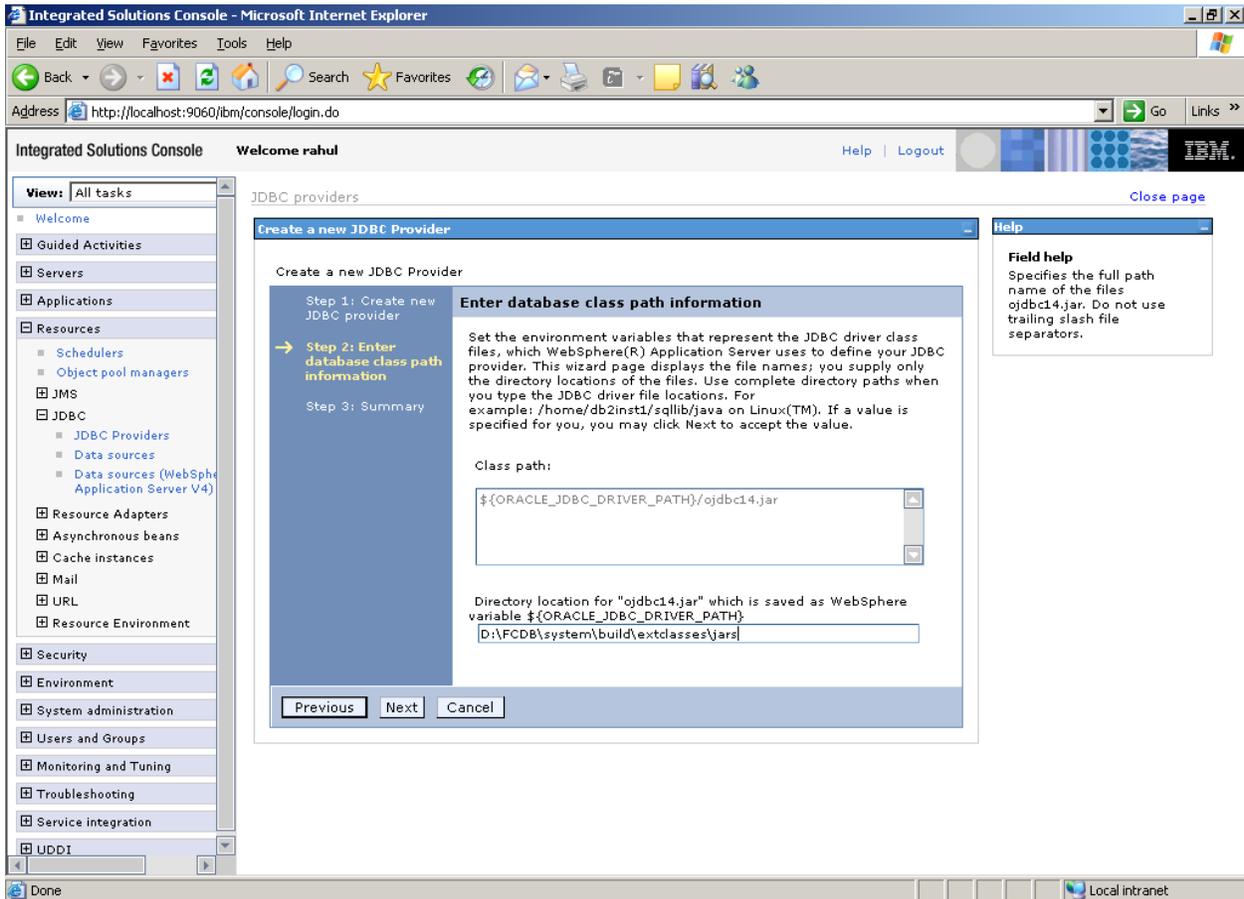


Figure 6.1.4

*Note: Make sure oracle thin client has been installed successfully and set directory location for “ojdbc14.jar”*

9) Click Next

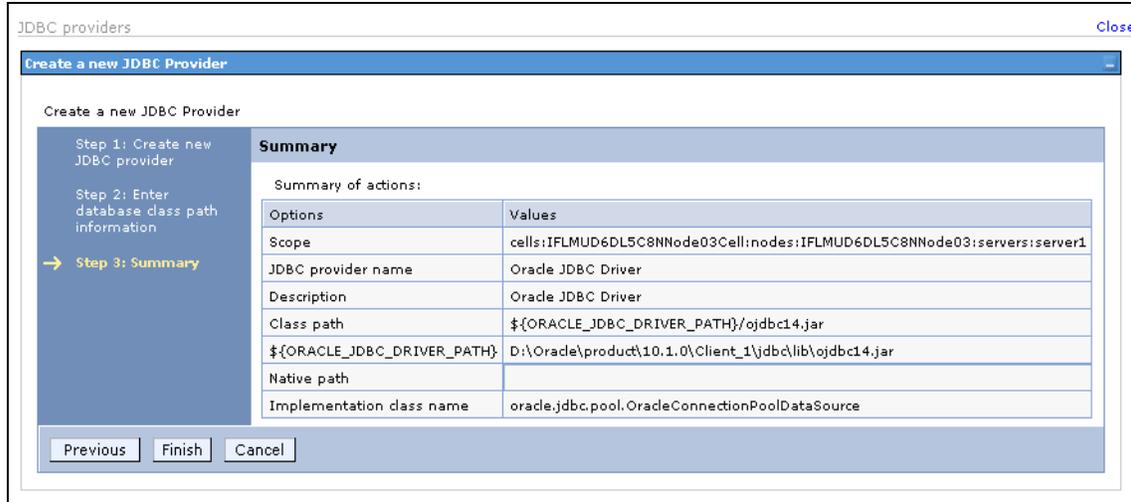


Figure 6.1.5

10) Click Finish

11) Click Save

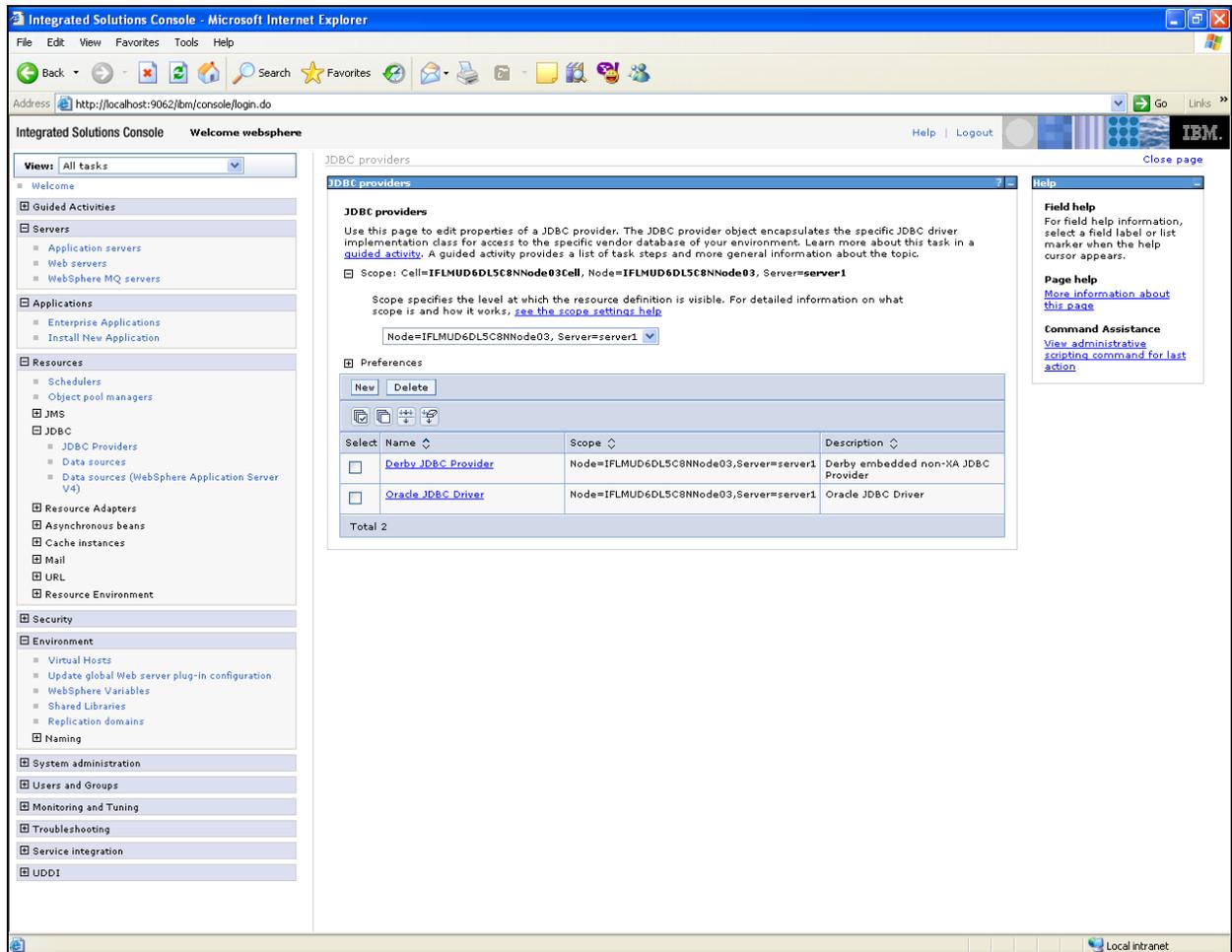


Figure 6.1.6

## b. Creating Data Source

For creation of Data source:

- 1) JDBC Providers -> Oracle JDBC Driver -> Data sources

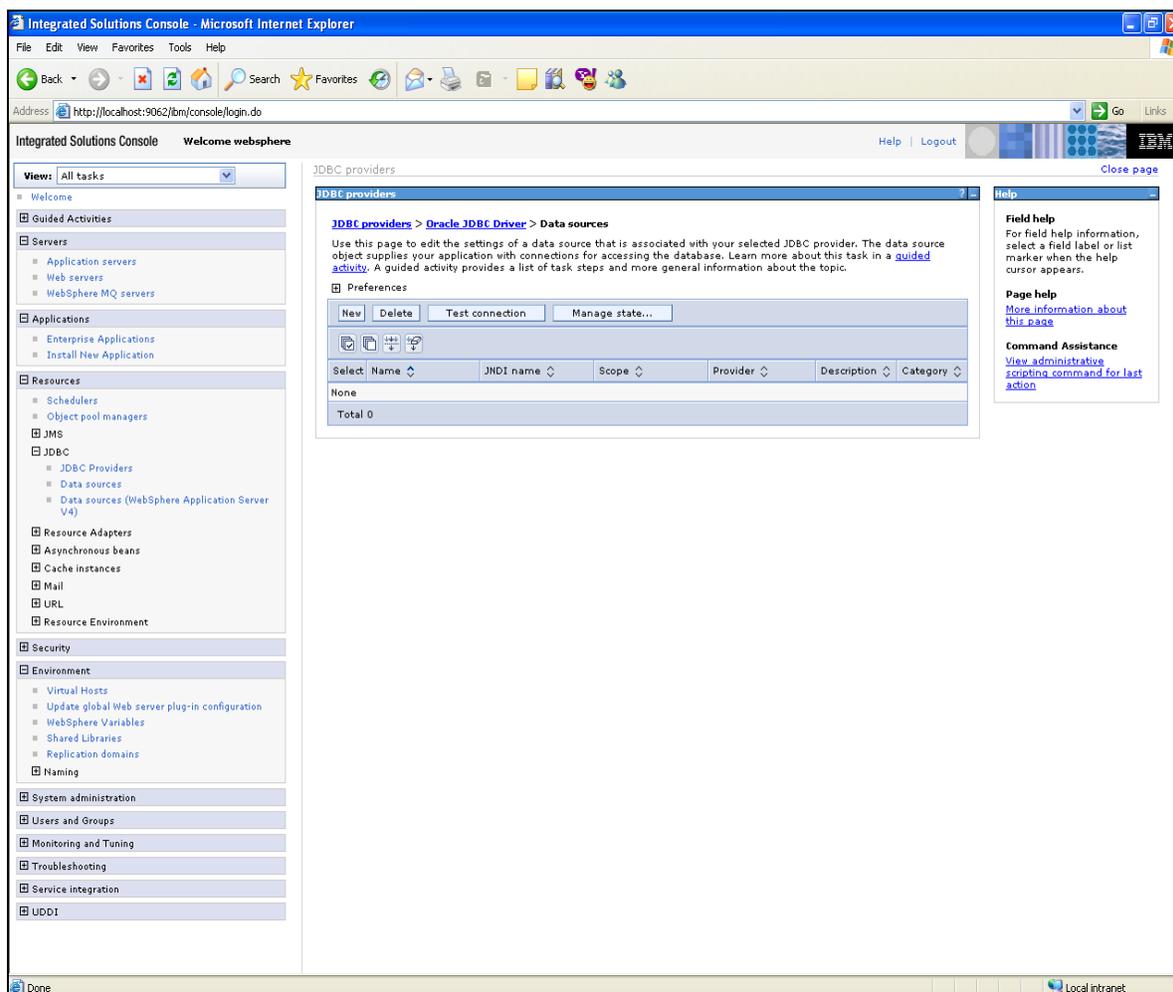


Figure 6.2.4

- 2) Click New

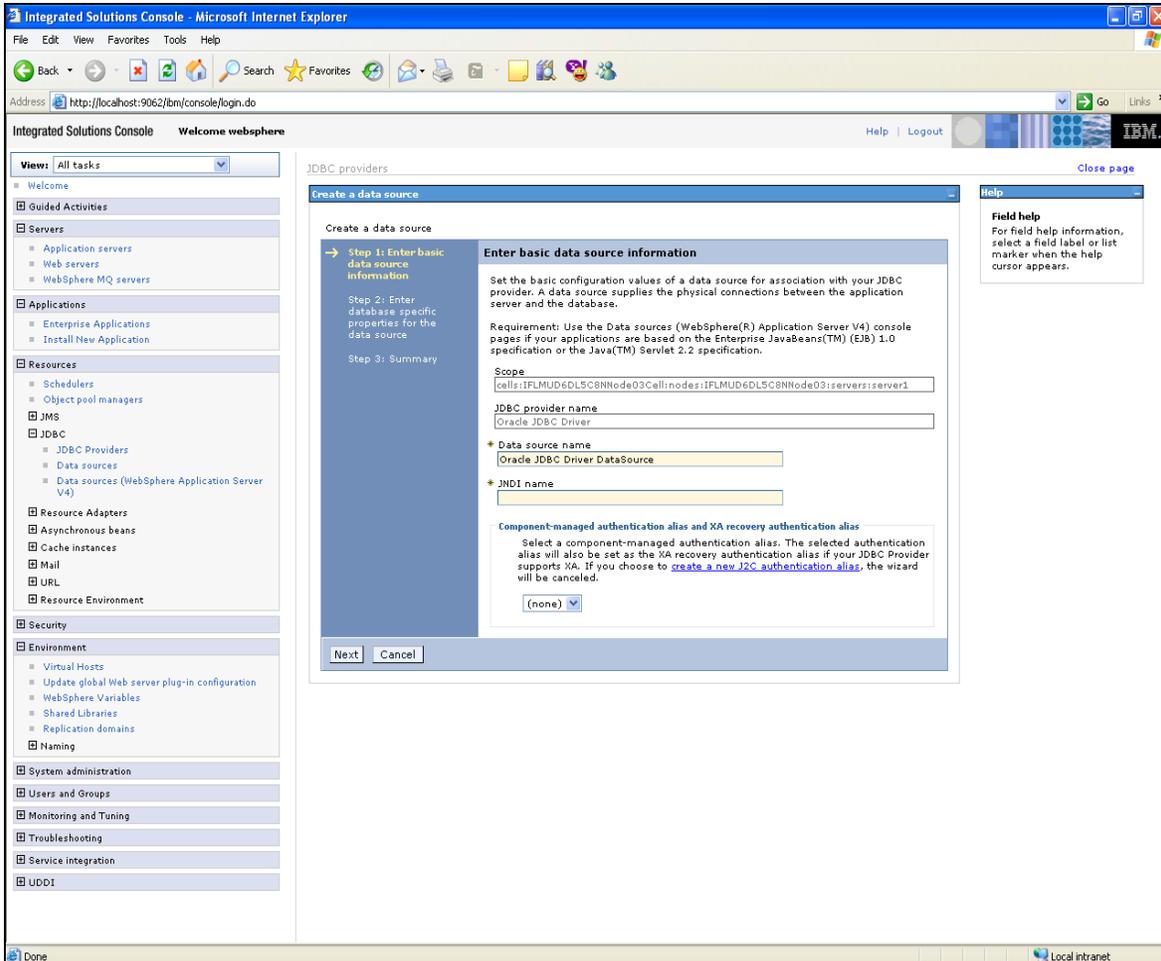


Figure 6.2.5

3) Click Create a new J2C authentication alias

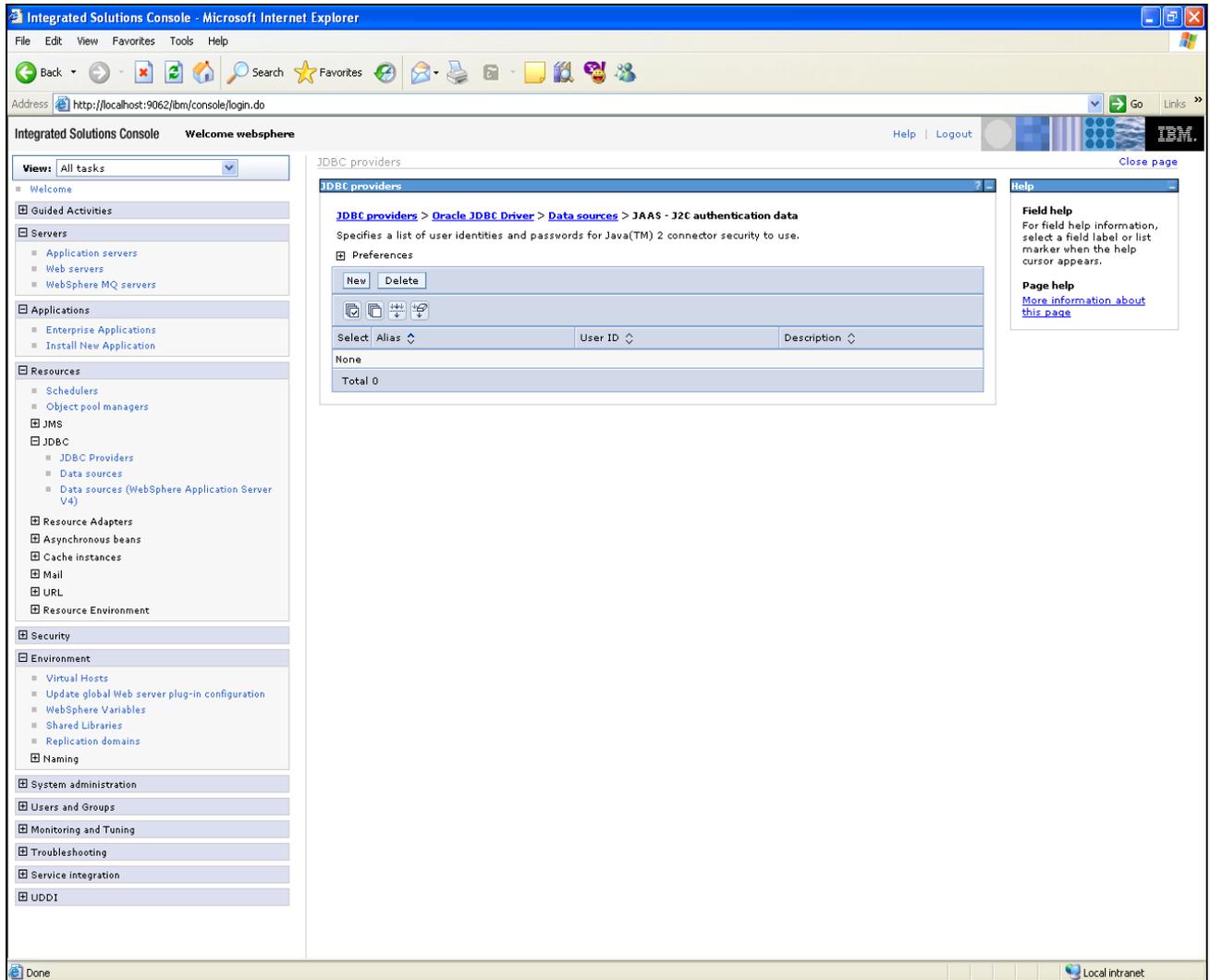


Figure 6.2.6

- 4) Click New
- 5) Set Alias (**ME**), User ID and Password.

6) The User ID/password should be of the FCDB ME APP DB user.

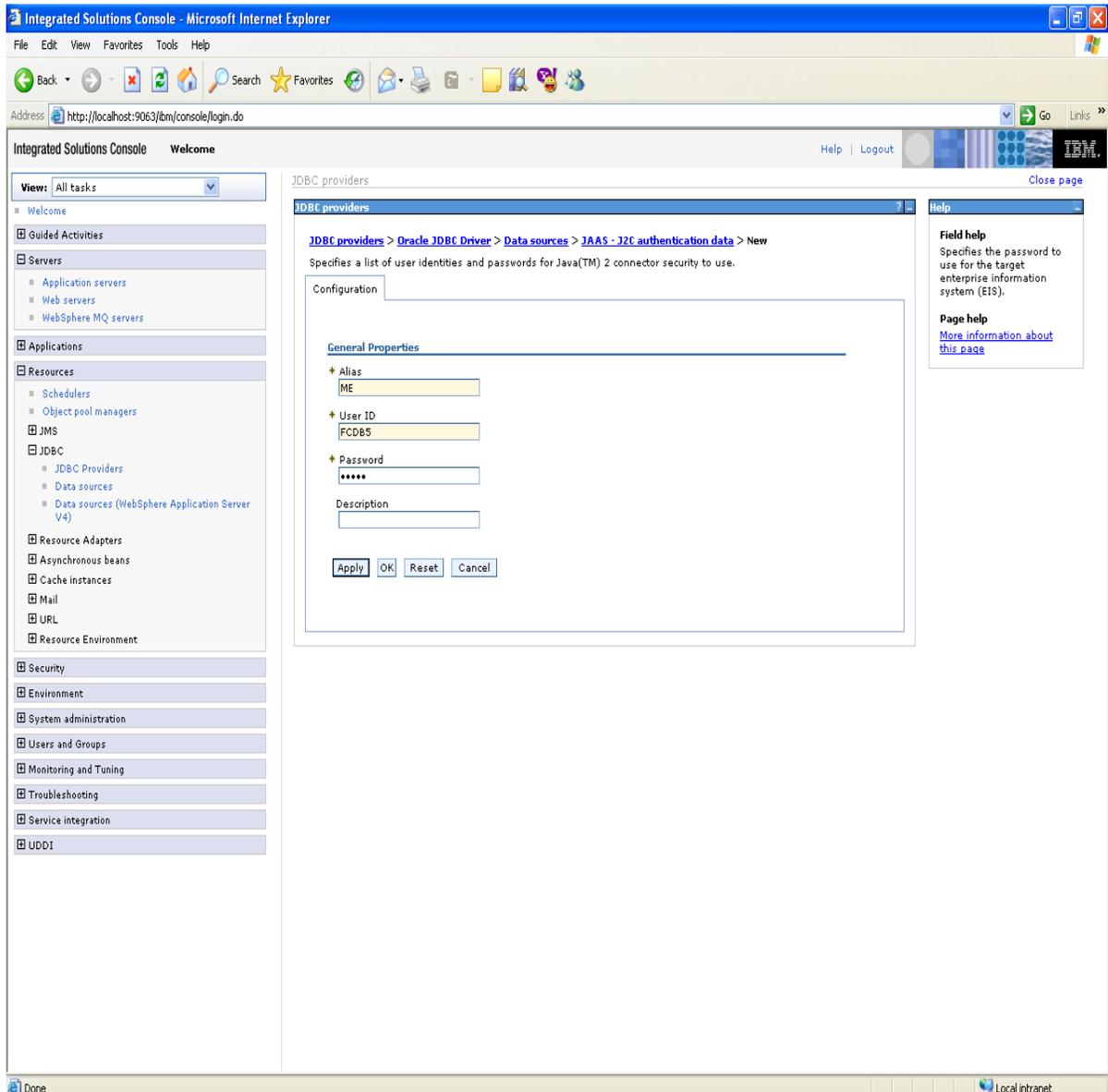


Figure 6.2.7

7) Click Apply

8) Click Save

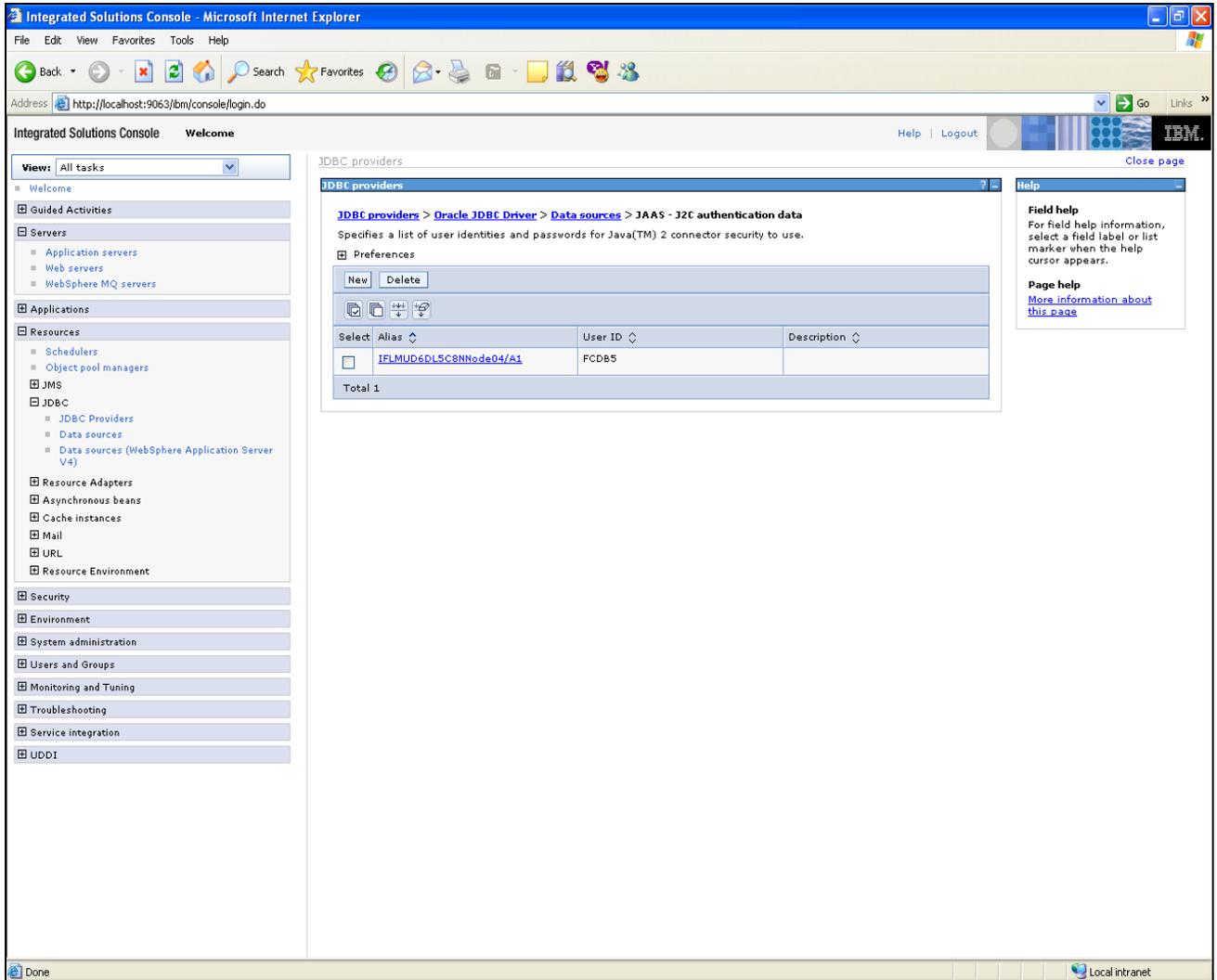


Figure 6.2.8

9) Go to JDBC Provider-> Oracle JDBC Driver-> Data sources

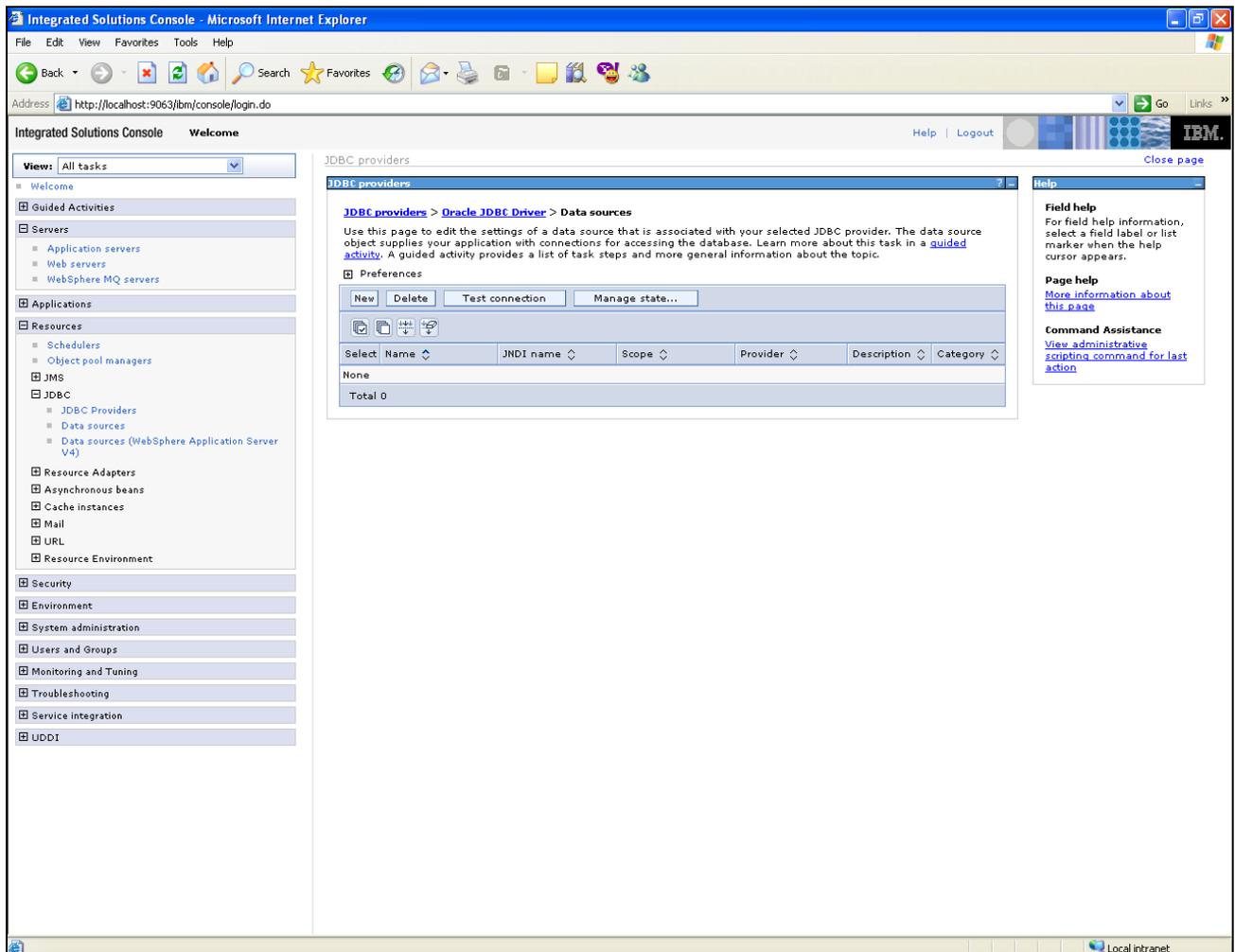


Figure 6.2.9

10) Click New

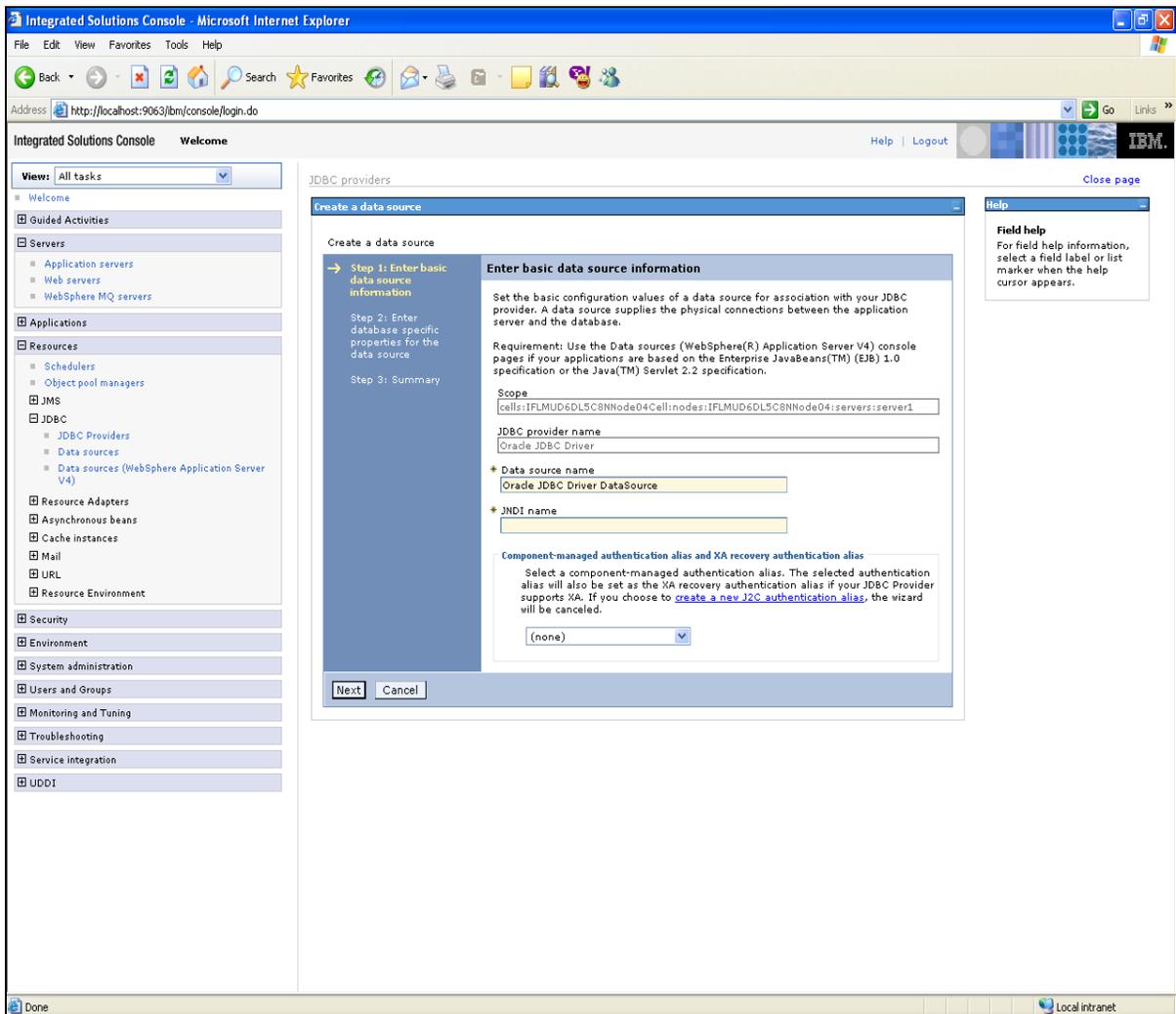


Figure 6.2.10

- 11) Give JNDI name as ME
- 12) Select J2C authentication alias created from drop down and set data source JNDI name as **ME**

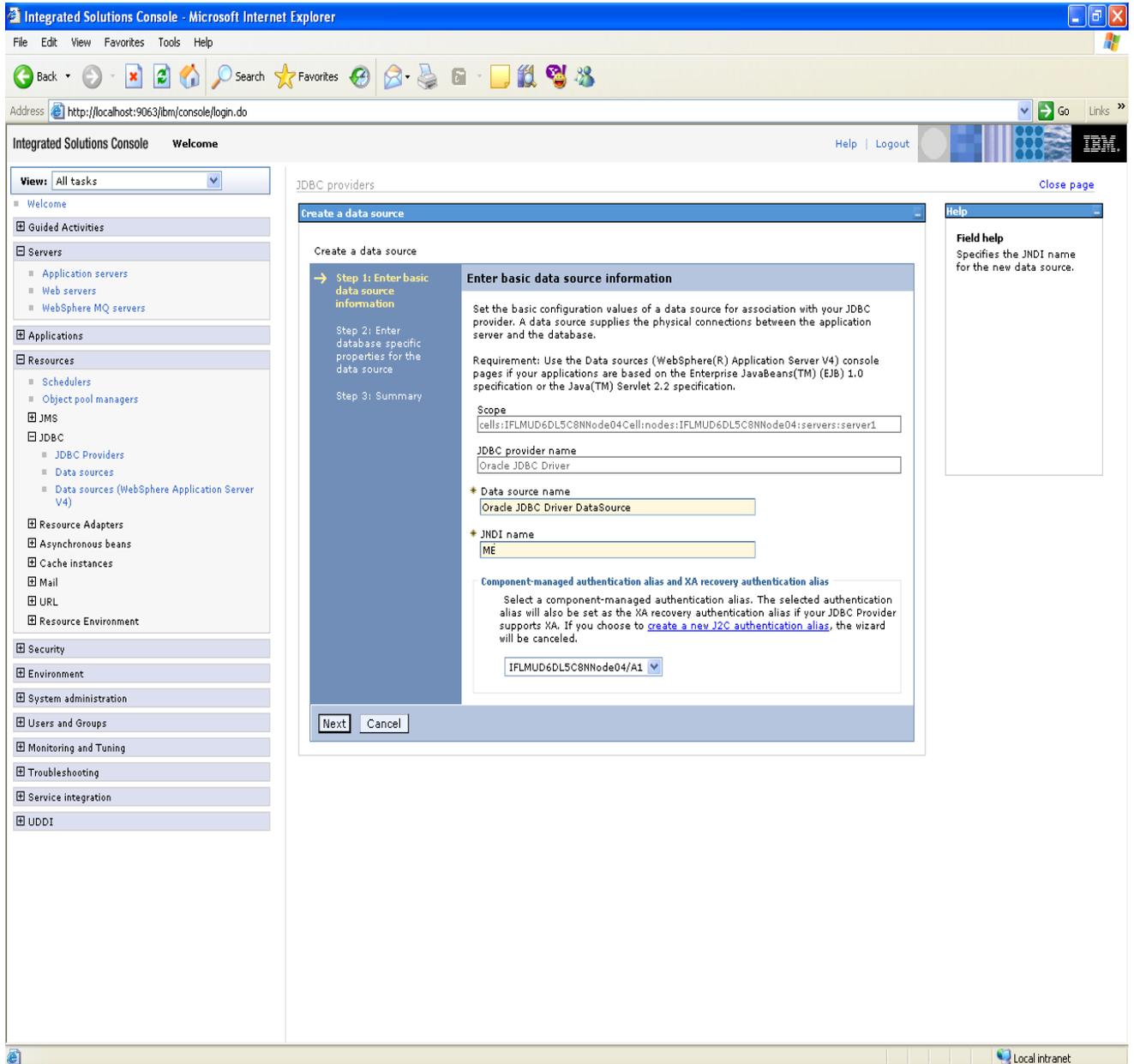


Figure 6.2.11

13) Click Next

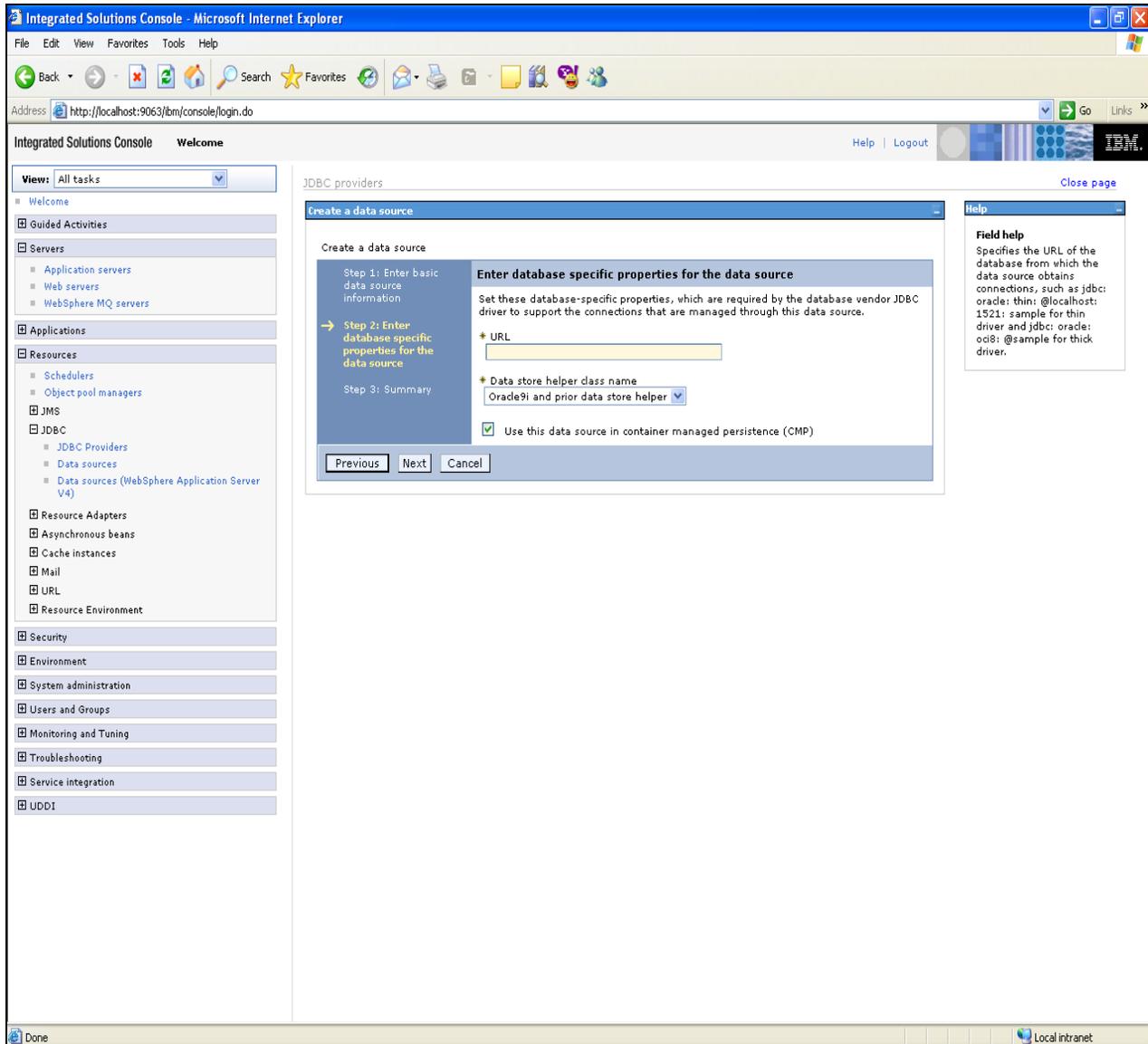


Figure 6.2.12

- 14) Set JDBC URL: "jdbc:oracle:thin:@<ip>:<port>:<database name>", for example: "jdbc:oracle:thin:@10.22.132.54:1521:FCDB". IP Address, port and database name should be changed according to configuration of database you've installed.
- 15) Select appropriate Data source helper class name from drop down

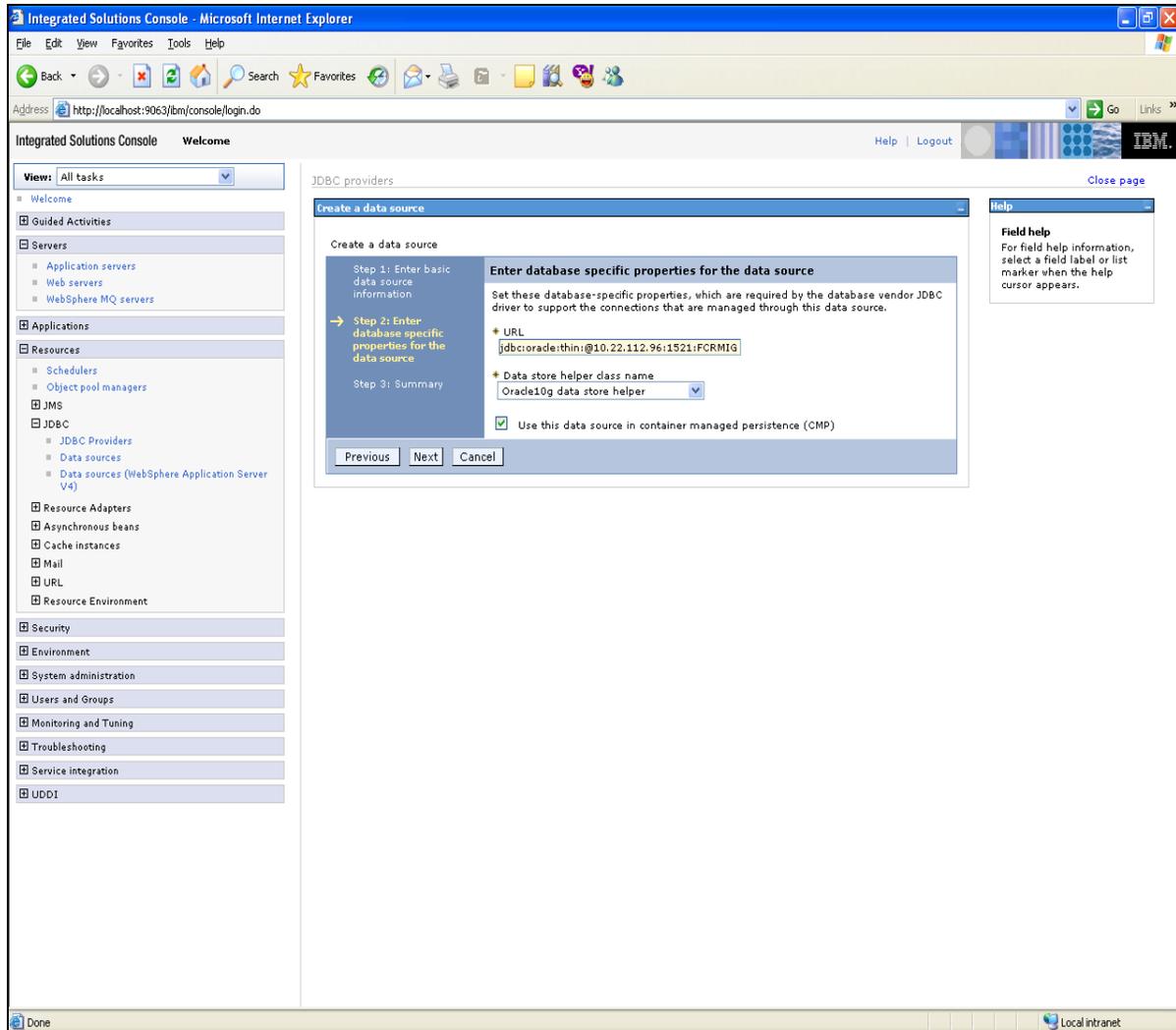


Figure 6.2.13

- 16) Pick the option “Oracle10g data store helper” for “Data store helper class name”.
- 17) Click Next

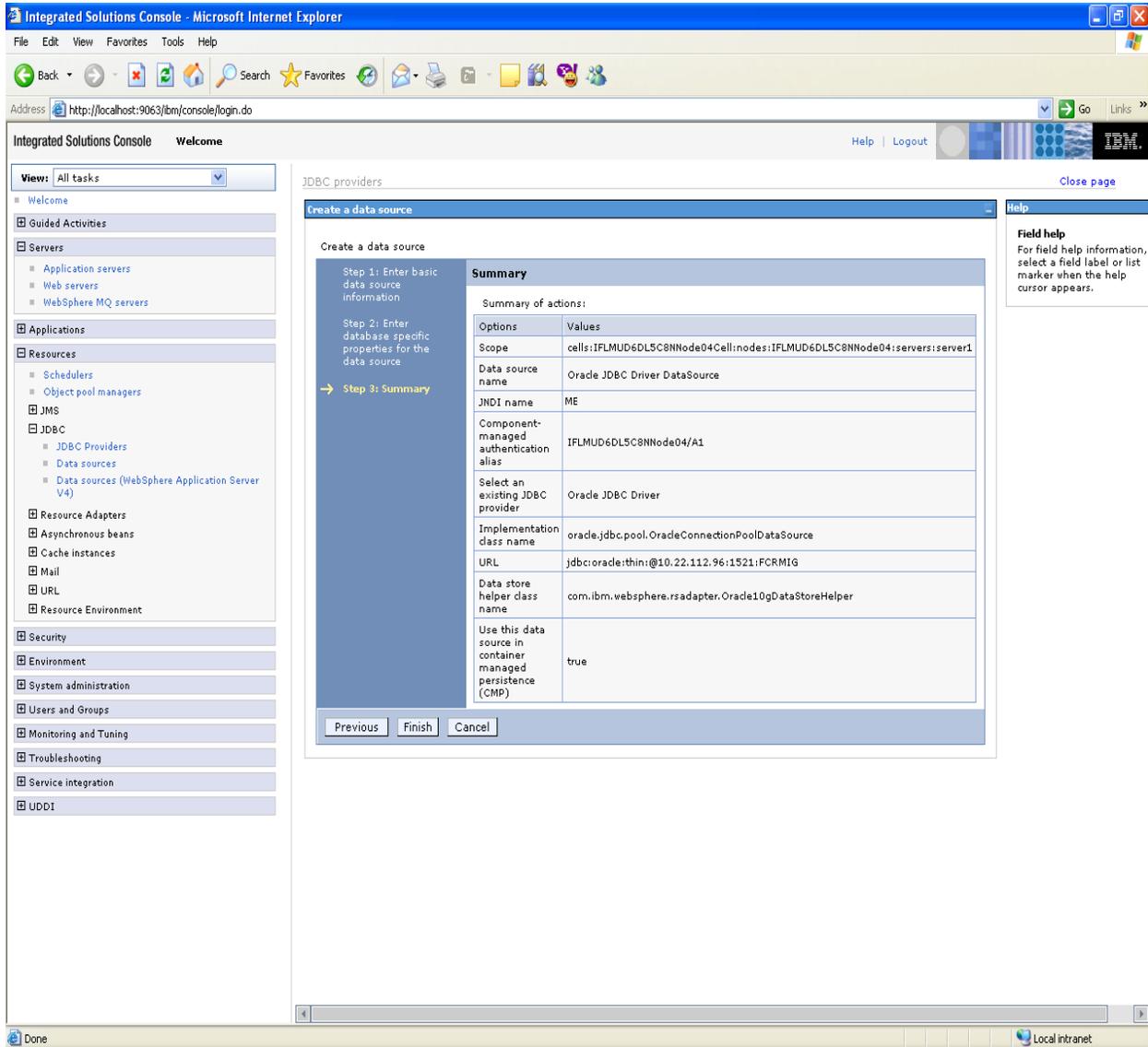


Figure 6.2.14

18) Click Finish

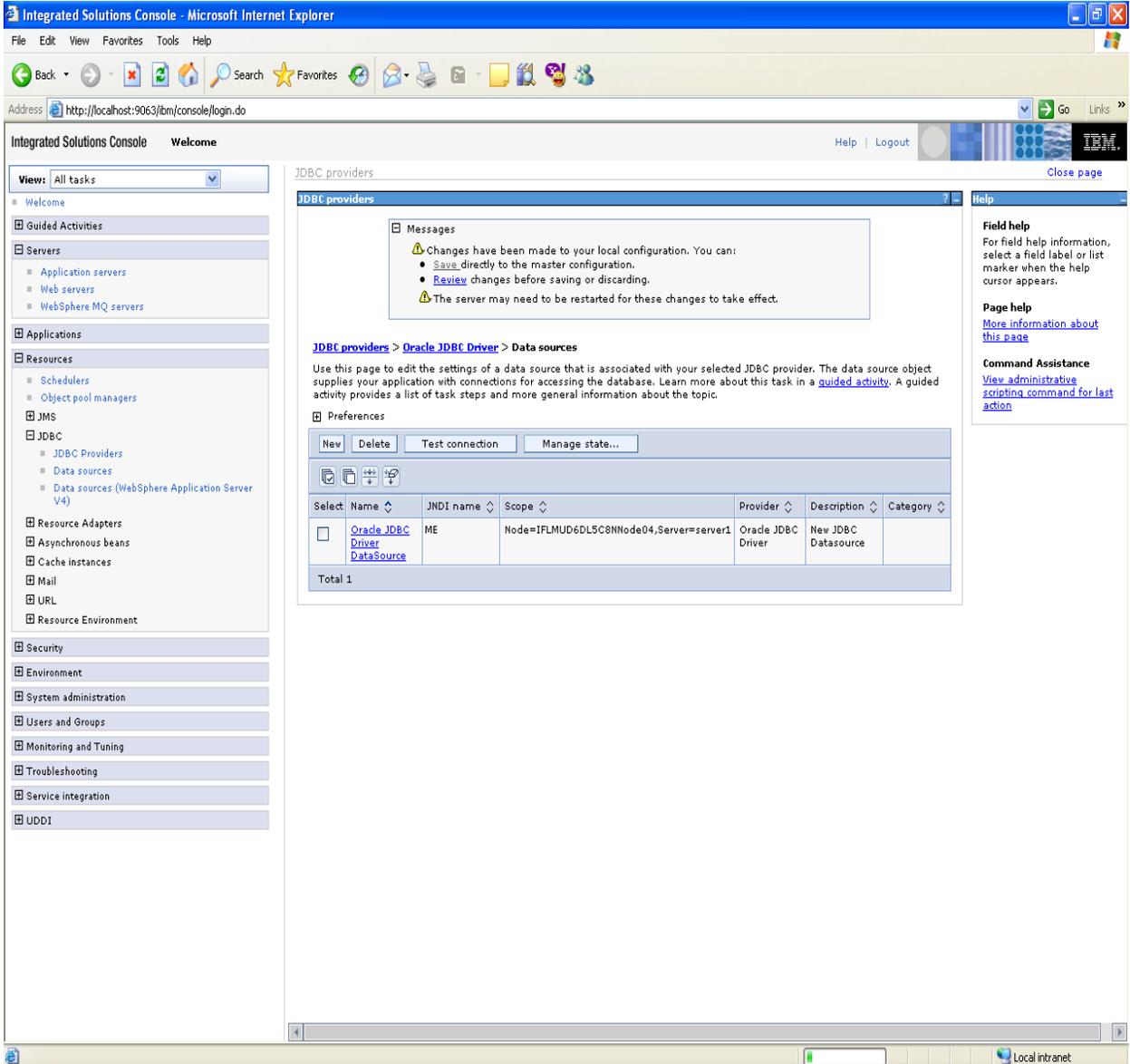


Figure 6.2.15

19) Click Save

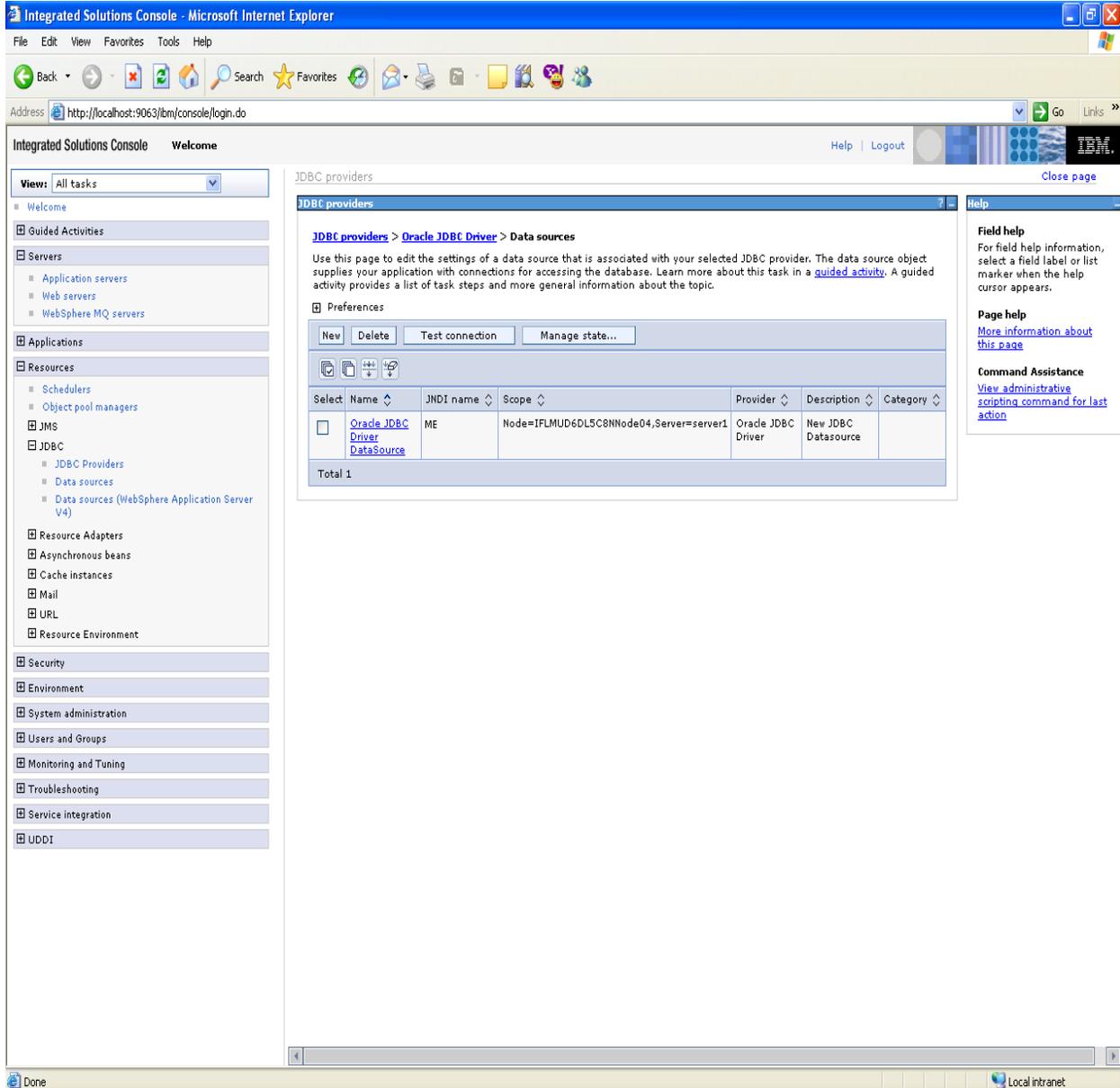


Figure 6.2.16

20) Select check box and click Test Connection

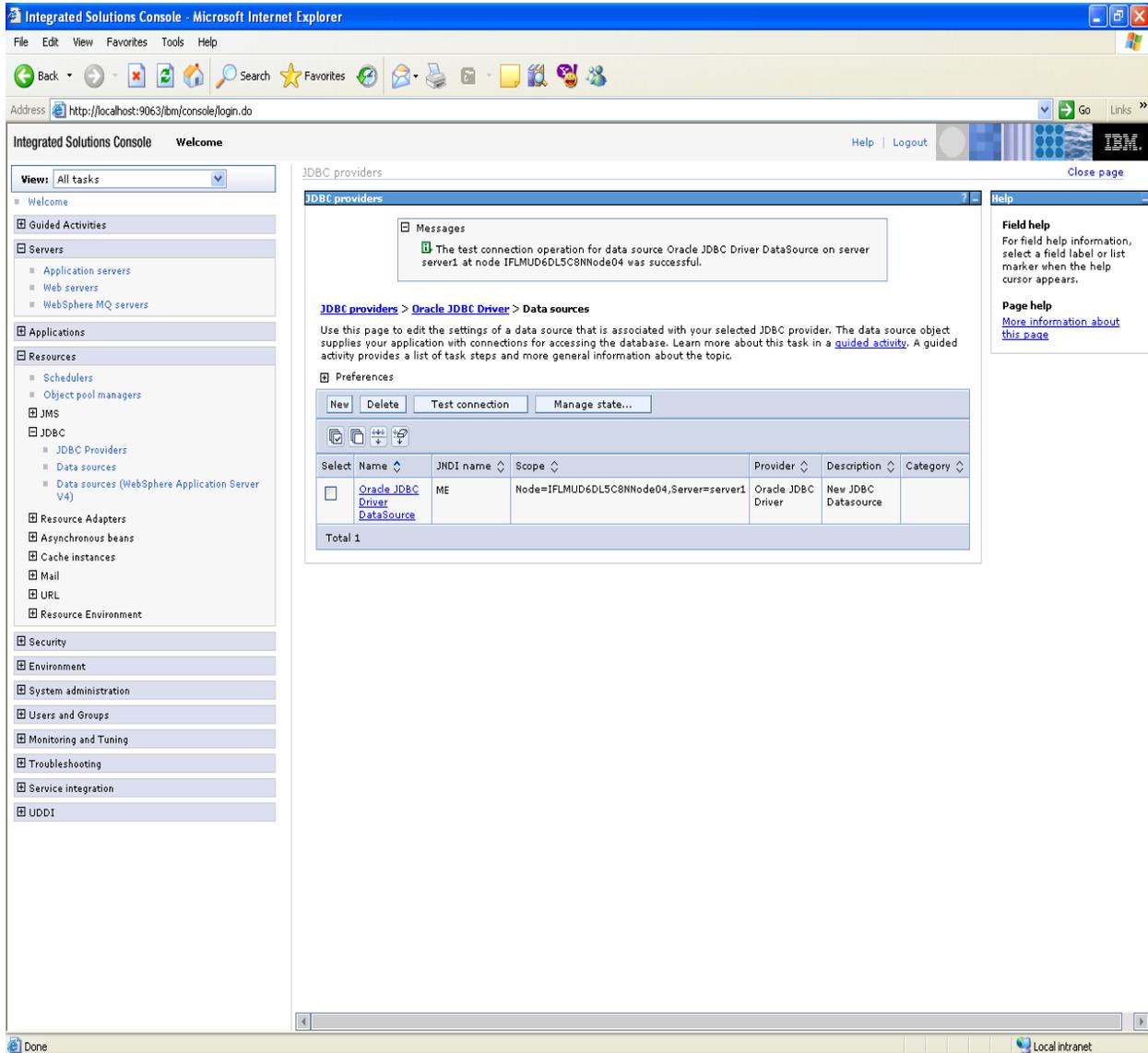


Figure 6.2.17

21) Go to JDBC providers>Oracle JDBC Driver>Data sources and click on Test connection. Success screen will be displayed (shown underneath) stating the test connection operation for database at node is successful.

Integrated Solutions Console - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:9060/ibm/console/login.do

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View: All tasks

- Welcome
- Guided Activities
- Servers
  - Application servers
  - Web servers
  - WebSphere MQ servers
- Applications
  - Enterprise Applications
  - Install New Application
- Resources
  - Schedulers
  - Object pool managers
  - JMS
    - JMS providers
    - Connection factories
    - Queue connection factories
    - Topic connection factories
    - Queues
    - Topics
    - Activation specifications
  - JDBC
    - JDBC Providers
    - Data sources
    - Data sources (WebSphere Application Server V4)
  - Resource Adapters
  - Asynchronous beans
  - Cache instances
  - Mail
  - URL
  - Resource Environment
- Security
- Environment
  - Virtual Hosts
  - Update global Web server plug-in configuration
  - WebSphere Variables
  - Shared Libraries
  - Replication domains
  - Naming
- System administration
- Users and Groups
- Monitoring and Tuning
- Troubleshooting

JDBC providers

JDBC providers

Messages

The test connection operation for data source Oracle JDBC Driver DataSource on server server1 at node IFLMUD5HP06WYNode01 was successful.

JDBC providers > Oracle JDBC Driver > Data sources

Use this page to edit the settings of a data source that is associated with your selected JDBC provider. The data source object supplies your application with connections for accessing the database. Learn more about this task in a [guided activity](#). A guided activity provides a list of task steps and more general information about the topic.

Preferences

New Delete Test connection Manage state...

Select	Name	JNDI name	Scope	Provider	Description	Category
<input type="checkbox"/>	<a href="#">Oracle JDBC Driver DataSource</a>	ME	Cell=IFLMUD5HP06WYNode01Cell	Oracle JDBC Driver	New JDBC DataSource	

Total 1

Field help  
For field help information, select a field label or list marker when the help cursor appears.

Page help  
[More information about this page](#)

Done

---

## **8. Module Installation**

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## a. J2ME based Oracle FLEXCUBE Direct Banking Application

The following archives should be downloaded on user mobile to enable Mobile Banking :-

J2ME Based Oracle J2ME Based Oracle FLEXCUBE Direct Banking Application.

Deployable	Context	Path Location
FCDBMidlet.jar		<FCDBME BASE DIR>\deploy\mobile
FCDBMidlet.jad		<FCDBME BASE DIR>\deploy\mobile

---

## 9. DB Creation

For completing the DB setup kindly refer to the document –  
“Oracle\_FLEXCUBE\_Direct\_Banking\_Database\_Setup“

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# 10. Encryption and Decryption of Property Files

The property files <Identity>.xml , fcat-config.xml , fcat.properties and mobileenabler.properties mentioned in the Appendix Section will be stored in the encrypted format and decrypted later for reading them.

The system property “fcat.propfile.isencr” is set as “true”; if the property files are encrypted. It is set as “false”; if property files are in plain text format. If this property is not set at all as system property then all the property files are assumed to be in plain text format.

The usage of the tools is mentioned in the [Tools](#) section

## 11. Appendix

## Configuration Files

The layers Presentation, channel & service in the system use property files as follow:

Property File	Purpose
B001.xml	Each web application deployed has its own property file named as <daemonName>.xml. The daemon name can be configured by property 'FCAT.INTERNETSERVLET.DAEMON.NAME' in web.xml. If no daemon name is specified, default name 'INTERNETSERVLET' is used. (internetservlet.xml).
fcac-config.xml	Configuration property used at the channel layer containing the db properties, doc root path, and invocation mode.
fcac.properties	Configuration property containing DB details for datasource "ME" and "AP".
mobileenabler.properties	This property file will contain the URL of TGT App. This file will also contain certain properties required by FCDB ME App to understand the response XPATH of TGT App for some common application behaviour.

Kindly refer to the sheet "Oracle\_FLEXCUBE\_Direct\_Banking\_Parameter\_Sheet" for the settings in the above property files.

### Folder Structure:

Folder Name	Comments
<FCDBME BASE DIR>/system/classes	This folder houses Application codebase in form of a jar or class files.
<FCDBME BASE DIR>/system/extclasses/jars	This folder contains all requisite third-party jars.
<FCDBME BASE DIR>/system/home	This folder contains all the configuration/properties files of the application.
<FCDBME BASE DIR>/logs	This folder contains the log files of the server.

---

## 12. Tools

Before using the tools, ensure that the Java home path is set.

### **Encryption and Decryption of property files in home folder.**

Change the working folder to <FCDBME BASE DIR>\system\build\tools. Pick up the following files for the respective platform and execute them at the command prompt:

File Name	OS
securepropertiesfiles.bat	Windows
securepropertiesfiles.sh	Linux

The tool operates in the interactive mode. The arguments will be provided on execution of the files.

To encrypt or decrypt a file the arguments prompted are :

<Encryption or Decryption mode(E/D)> <Path of the input property file> <Path of the output property file>

e.g. E D:\FCDBME\system\home\fcac-config.xml D:\config

Once the file is encrypted set the system property "fcac.propfile.isencr" to "true".

### **Build the XSL templates to required language.**

---

The templated xls will be picked up from the location

<FCDBME BASE DIR>\system\datafiles\gui\<usertype>\<channel id>\template To generate the GUI xls from the templated xls the following tools must be executed at the command prompt.

File Name	OS
xslbuild.bat	Windows
xslbuild.sh	Linux

The tool will execute in the interactive mode and prompt for the user type, channel id, language id and format. After execution the generated files will be stored in the location

<FCDBME BASE DIR>\system\datafiles\gui\<usertype>\<channel id>\<language id>