

FCUBS GridLink Datasource Configuration
Oracle FLEXCUBE Universal Banking
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1. Weblogic JDBC GridLink Datasource

1.1 Preface

You need to carry out certain tasks manually before Oracle FLEXCUBE deployment. This document details out the pre-deployment tasks based on GridLink Datasource configuration in Weblogic Application Server.

1.2 Purpose

Purpose of this document is to give understanding and configuration of Weblogic GridLink Datasource for Oracle FLEXCUBE.

1.3 Weblogic Data-Grid Datasource Overview

In WebLogic Server 12c (12.1.2), JDBC GridLink includes Oracle Database 12c integration, having the latest functionalities of Application Continuity, Database Resident Connection Pool, Pluggable Database and Global Data Services.

The RAC integration capabilities of Universal Connection Pool (UCP) have been utilized by the WebLogic Server GridLink Data Source implementation to provide the Fast Connection Failover (FCF), Runtime Connection Load-Balancing (RCLB),

The active management of the connections in the pool is based on static settings configured on the connection pool itself (min/max capacity, timeouts, etc.) and real time information the connection pool receives from the RAC Oracle Notification Service (ONS) subsystem that advises the “client” of any state changes within the RAC cluster.

WebLogic GridLink Data Sources and JDBC connection pools leverage the load balancing functionality provided by an Oracle RAC database to provide better throughput and more efficient use of resources.

1.4 Introduction

FLEXCUBE is a financial application which needs fast connection failover on runtime to ensure zero downtime and proper disaster recovery.

FLEXCUBE will use GridLink data source for Fast Connection Failover and responds to Oracle RAC events using Oracle Notification Service (ONS). This ensures that the connection pool in the GridLink data source contains valid connections (including reserved connections) without the need to poll and test connections. It also ensures that connections are created on new nodes as they become available.

A GridLink data source uses Fast Connection Failover to:

- Provide rapid failure detection.
- Abort and remove invalid connections from the connection pool.
- Perform graceful shutdown for planned and unplanned Oracle RAC node outages. See Graceful Handling for Oracle RAC Outages.

- Adapt to changes in topology, such as adding or removing a node.
- Distribute runtime work requests to all active Oracle RAC instances, including those rejoining a cluster.

WebLogic GridLink Data Sources and JDBC connection pools leverage the runtime load balancing functionality provided by an Oracle RAC database to provide better throughput and more efficient use by FLEXCUBE application.

Runtime connection load balancing provides the following benefits:

- Manages pooled connections for high performance and scalability.
- Receives continuous recommendations on the percentage of work to route to database instances.
- Adjusts distribution of work based on different back-end node capacities such as CPU capacity or response time.
- Reacts quickly to changes in cluster reconfiguration, application workload, overworked nodes, or hangs.
- Receives metrics from the Oracle RAC Load Balance by ONS. Connections to well performing instances are used most often. New and unused connections to under-performing instances will gravitate away over time.

1.5 **Database Related Configuration**

1.5.1 **ONS Setup**

Make Sure ONS service is running in each of the database servers by issuing the below command.(To be run from GRID home)

ONS Status Check:

```
$ORACLE_HOME/opmn/bin/onsctl ping
ons is not running ...
```

Starting ONS:

```
$ORACLE_HOME/opmn/bin/onsctl start
onsctl start: ons started
$ORACLE_HOME/opmn/bin/onsctl ping
ons is running ...
```

By default ONS runs on port 6200.

1.5.2 **Database Service Modification and Monitoring**

For the database service that we use in the Datasource which makes use of Active Grid Link, goal needs to be defined which defaults to none.

The below sql block needs to be run in the database where the service is created.

```

BEGIN
  DBMS_SERVICE.MODIFY_SERVICE ( service_name => 'psrcbt'
    , aq_ha_notifications => true
    , goal => DBMS_SERVICE.GOAL_THROUGHPUT
    , clb_goal => DBMS_SERVICE.CLB_GOAL_SHORT
  );
END;

```

Also we can monitor the metric generation for our service via v\$servicemetric

1.6 Configuring GridLink Datasource

1.6.1 Non-XA Gridlink Datasource

1) Navigate to Domain → Services → Data Sources → select New > **GridLink data source**

The screenshot shows the Oracle WebLogic Server Administration Console interface. The main content area displays the 'Summary of JDBC Data Sources' page. A table titled 'Data Sources (Filtered - More Columns Exist)' lists several data sources. The 'GridLink Data Source' row is highlighted with a red box. The table has columns for Name, Type, JNDI Name, Targets, Scope, and Domain Partitions.

Name	Type	JNDI Name	Targets	Scope	Domain Partitions
Generic Data Source					
GridLink Data Source					
Multi Data Source	Generic	jdbc/BPlatformDatasource	bi_cluster	Global	
Proxy Data Source	Generic	jdbc/LocalSvcTbdDataSource	AdminServer	Global	
UCP Data Source	Generic	jdbc/mds/ovsm	AdminServer, bi_cluster	Global	
opss-audit-DBOS	Generic	jdbc/AuditAppendDataSource	AdminServer, bi_cluster	Global	
opss-audit-viewDS	Generic	jdbc/AuditViewDataSource	AdminServer, bi_cluster	Global	
opss-data-source	Generic	jdbc/OpssDataSource	AdminServer, bi_cluster	Global	
wlsservices_datasource	Generic	jdbc/WLSServicesDataSource	bi_cluster	Global	

2) Enter the **Name, JNDI Name**. Choose Database Driver as Oracle's Driver (Thin) for GridLink Connection. Click on **Next**

JDBC GridLink Data Source Properties
The following properties will be used to identify your new JDBC GridLink data source.
* Indicates required fields

What would you like to name your new JDBC GridLink data source?
* **Name:** jdbc/fcjddevDS

What scope do you want to create your data source in?
Scope: Global

What JNDI name would you like to assign to your new JDBC GridLink data source?
JNDI Name: jdbc/fcjddevDS

What database type would you like to select?
Database Type: Oracle

What database driver would you like to use to create database connections? Note: * indicates that the driver is explicitly supported by Oracle WebLogic Server.
Database Driver: Oracle's Driver (Thin) for GridLink Connections; Versions: Any

Back Next Finish Cancel

3) Uncheck the **“Supports Global Transactions”** and click on **Next**

ORACLE WebLogic Server Administration Console 12c

Home Log Out Preferences Record Help Welcome, weblogic Connected to: bifoundation_domain

Home -> Summary of JDBC Data Sources

Create a New JDBC GridLink Data Source

Back Next Finish Cancel

Transaction Options
You have selected non-XA JDBC driver to create database connection in your new data source.
Does this data source support global transactions? If yes, please choose the transaction protocol for this data source.

Supports Global Transactions
Select this option if you want to enable non-XA JDBC connections from the data source to participate in global transactions using the *Logging Last Resource* (LLR) transaction optimization. Recommended in place of Emulate Two-Phase Commit.

Logging Last Resource
Select this option if you want to enable non-XA JDBC connections from the data source to emulate participation in global transactions using JTA. Select this option only if your application can tolerate heuristic conditions.

Emulate Two-Phase Commit
Select this option if you want to enable non-XA JDBC connections from the data source to participate in global transactions using the one-phase commit transaction processing. With this option, no other resources can participate in the global transaction.

One-Phase Commit

Back Next Finish Cancel

4) Select first option **“Enter individual listener information”** and click **Next**

ORACLE WebLogic Server Administration Console 12c

Home Log Out Preferences Record Help Welcome, weblogic Connected to: bifoundation_domain

Home -> Summary of JDBC Data Sources

Create a New JDBC GridLink Data Source

Back Next Finish Cancel

GridLink data source connection Properties Options
You can either enter the complete JDBC URL or enter individual host and port pair and let the assistant generate the JDBC URL.

Enter individual listener information

Enter complete JDBC URL

Back Next Finish Cancel

5) Enter the Database Name, Host Name, Port, User Name, Password, Confirm Password and Click on **Next**

Define Connection Properties.

What is the service name of the database you would like to connect to?

Service Name:

Enter host and port of each listener separated by colon and click the add button. In the case of a RAC DB listener, specify the SCAN address.

Host and Port:

What database account user name do you want to use to create database connections?

Database User Name:

What is the database account password to use to create database connections?

Password:

Confirm Password:

Additional Connection Properties:

Protocol:

oracle.jdbc.DRCPConnectionClass:

6) Click “Test All Listeners” and check the connection is established properly with the database and Click **Next**

Change Center

View changes and restarts

No pending changes exist. Click the Release Configuration button to allow others to edit the domain.

Domain Structure

Home > Summary of JDBC Data Sources

Messages

✓ Connection test for jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=blrgw6117.in.oracle.com)(PORT=1521)))CONNECT_DATA=(SERVICE_NAME=FCUBS11G))) succeeded.

Create a New JDBC GridLink Data Source

Test GridLink Database Connection

Test the database availability and the connection properties you provided.

What is the full package name of JDBC driver class used to create database connections in the connection pool?
(Note that this driver class must be in the classpath of any server to which it is deployed.)

Driver Class Name:

What is the URL of the database to connect to? The format of the URL varies by JDBC driver.

URL:

Click the test button to test each listener.

jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=blrgw6117.in.oracle.com)(PORT=1521)))CONNECT_DATA=(SERVICE_NAME=FCUBS11G)))

What database account user name do you want to use to create database connections?

Database User Name:

What is the database account password to use to create database connections?

7) Enter the ONS host:port details which has already been configured in database

The screenshot shows the 'ONS Client Configuration' page in the Oracle Enterprise Manager console. The left sidebar contains a 'Domain Structure' tree with 'bifoundation_domain' selected, and a 'System Status' section showing 'Health of Running Servers' with 2 OK servers. The main configuration area includes a 'Back | Next | Finish | Cancel' navigation bar, a 'FAN Enabled' checkbox, and a list of ONS nodes: 'mc13dbzg1-zone-1-mc13-n1:6200' and 'mc13dbzg1-zone-1-mc13-n2:6200'. Below this are fields for 'ONS Wallet File Directory' and 'ONS Wallet Password', and a 'Confirm ONS Wallet Password' field.

8) Click "Test ONS Nodes" to check the connection with ONS.

The screenshot shows the 'Test ONS Nodes' page in the Oracle Enterprise Manager console. The left sidebar is identical to the previous screenshot. The main configuration area now shows a 'Messages' section with a green checkmark and the text 'Connection test for mc13dbzg1-zone-1-mc13-n1:6200 succeeded.' Below this is a 'Test ONS client configuration' section with a 'Test ONS Node' button and a list of nodes: 'mc13dbzg1-zone-1-mc13-n1:6200' and 'mc13dbzg1-zone-1-mc13-n2:6200'. The 'ONS Wallet File Directory' and 'ONS Wallet Password' fields are also visible.

9) Select Target and click on **Finish**

The screenshot shows the Oracle WebLogic Server Administration Console interface. The main window is titled "Create a New JDBC GridLink Data Source". It has a navigation bar with "Back", "Next", "Finish", and "Cancel" buttons. Below the navigation bar, there is a "Select Targets" section with the following text: "You can select one or more targets to deploy your new JDBC data source. If you don't select a target, the data source will be created but not deployed. You will need to deploy the data source at a later time." The "Servers" section has a checked checkbox for "AdminServer". The "Clusters" section has a checked checkbox for "bi_cluster", which is expanded to show "Part of the cluster" with a checked checkbox for "bi_server1".

1.6.2 XA Gridlink Datasource

1) Navigate to Domain → Services → Data Sources → select New > **GridLink data source**

The screenshot shows the Oracle WebLogic Server Administration Console interface. The main window is titled "Summary of JDBC Data Sources". It has a navigation bar with "Home", "Log Out", "Preferences", "Record", and "Help" buttons. Below the navigation bar, there is a "Configuration" tab. The main content area contains a table of data sources. The table has columns for "Name", "Type", "JNDI Name", "Targets", "Scope", and "Domain Partitions". The "GridLink Data Source" row is highlighted in red. Below the table, there is a "New" button and a "Delete" button.

Name	Type	JNDI Name	Targets	Scope	Domain Partitions
Generic Data Source					
GridLink Data Source					
Multi Data Source	Generic	jdbc/BIPlatformDataSource	bi_cluster	Global	
Proxy Data Source	Generic	jdbc/LocalSvcTbiDataSource	AdminServer	Global	
UCP Data Source	Generic	jdbc/mds/owism	AdminServer, bi_cluster	Global	
opss-audit-DBDS	Generic	jdbc/AuditAppendDataSource	AdminServer, bi_cluster	Global	
opss-audit-viewDS	Generic	jdbc/AuditViewDataSource	AdminServer, bi_cluster	Global	
opss-data-source	Generic	jdbc/OpssDataSource	AdminServer, bi_cluster	Global	
wlsservices_datasource	Generic	jdbc/WLSServicesDataSource	bi_cluster	Global	

2) Enter the **Name, JNDI Name**. Choose Database Driver as Oracle's Driver (XA Thin) for GridLink Connection. Click on **Next**

The following properties will be used to identify your new JDBC GridLink data source.
* Indicates required fields

What would you like to name your new JDBC GridLink data source?
Name: jdbc/fcjschedulerDS

What scope do you want to create your data source in?
Scope: Global

What JNDI name would you like to assign to your new JDBC GridLink data source?
JNDI Name: jdbc/fcjschedulerDS

What database type would you like to select?
Database Type: Oracle

What database driver would you like to use to create database connections? Note: * indicates that the driver is explicitly supported by Oracle WebLogic Server.
Database Driver: *Oracle's Driver (Thin XA) for GridLink Connections Versions: Any

Buttons: Back, Next, Finish, Cancel

3) Click **Next**

ORACLE WebLogic Server Administration Console 12c

Home Log Out Preferences Record Help Welcome, weblogic Connected to: bifoundation_domain

Home -> Summary of JDBC Data Sources

Create a New JDBC GridLink Data Source

Buttons: Back, Next, Finish, Cancel

Transaction Options

You have selected an XA JDBC driver to use to create database connection in your new data source. The data source will support global transactions and use the 'Two-Phase Commit' global transaction protocol. No other transaction configuration options are available.

Buttons: Back, Next, Finish, Cancel

4) Choose first option "Enter individual listener information" and Click **Next**

ORACLE WebLogic Server Administration Console 12c

Home Log Out Preferences Record Help Welcome, weblogic Connected to: bifoundation_domain

Home -> Summary of JDBC Data Sources

Create a New JDBC GridLink Data Source

Buttons: Back, Next, Finish, Cancel

GridLink data source connection Properties Options

You can either enter the complete JDBC URL or enter individual host and port pair and let the assistant generate the JDBC URL.

Enter individual listener information

Enter complete JDBC URL

Buttons: Back, Next, Finish, Cancel

- 5) Enter the Database Name, Host Name, Port, User Name, Password, Confirm Password and Click on **Next**

- 6) Click “Test All Listeners” and check the connection is established properly with the database and Click **Next**

7) Enter the ONS host:port details which has already been configured in database

The screenshot shows the 'ONS Client Configuration' page in the Oracle WebLogic Administration Console. The left sidebar contains a 'Domain Structure' tree with 'bifoundation_domain' expanded to 'Services' > 'Data Sources'. Below it is a 'System Status' section showing 'Health of Running Servers' with 2 OK, 0 Warning, 0 Overloaded, 0 Critical, and 0 Failed. The main content area is titled 'ONS Client Configuration' and includes a 'Back | Next | Finish | Cancel' navigation bar. The configuration steps are:

- Check to enable the data source to subscribe to and process Oracle FAN events.
- FAN Enabled**
- Enter host and port of each ONS node separated by colon and click the add button.
- ONS host and port:** A list box containing 'mc13dbzg1-zone-1-mc13-n1-6200' and 'mc13dbzg1-zone-1-mc13-n2-6200'.
- The location of the Oracle wallet file in which the SSL certificates are stored.
- ONS Wallet File Directory:** An empty text field.
- The wallet password attribute that is included as part of the ONS client configuration string. This attribute is only required when ONS is configured to use the SSL protocol.
- ONS Wallet Password:** An empty text field.
- Confirm ONS Wallet Password:** An empty text field.

 At the bottom, there is another 'Back | Next | Finish | Cancel' navigation bar.

8) Click "Test ONS Nodes" to check the connection with ONS.

The screenshot shows the 'Test ONS Nodes' page in the Oracle WebLogic Administration Console. The left sidebar is identical to the previous screenshot. The main content area has a 'Home | Log Out | Preferences | Record | Help' navigation bar and a 'Welcome, weblogic | Connected to: bifoundation_doma' status bar. The page title is 'Summary of JDBC Data Sources'. A green message box states: 'Connection test for mc13dbzg1-zone-1-mc13-n1:6200 succeeded.' Below this is a 'Create a New JDBC GridLink Data Source' section with a 'Test All ONS Nodes | Back | Next | Finish | Cancel' navigation bar. The configuration steps are:

- Test ONS client configuration**
- Test the ONS client configuration properties you provided
- Check to enable the data source to subscribe to and process Oracle FAN events.
- FAN Enabled**
- Enter host and port of each ONS node separated by colon and click the add button.
- ONS host and port:** A list box containing 'mc13dbzg1-zone-1-mc13-n1:6200,mc13dbzg1-zone-1-mc13-n2:6200'.
- Click the test button to test ONS node.
- Test ONS Node:** mc13dbzg1-zone-1-mc13-n1:6200
- Test ONS Node:** mc13dbzg1-zone-1-mc13-n2:6200
- The location of the Oracle wallet file in which the SSL certificates are stored.
- ONS Wallet File Directory:** An empty text field.
- The wallet password attribute that is included as part of the ONS client configuration string. This attribute is only required when ONS is configured to use the SSL protocol.

 At the bottom, there is another 'Back | Next | Finish | Cancel' navigation bar.

9) Select Target and click on **Finish**

The screenshot displays the Oracle WebLogic Server Administration Console interface. The main window title is "ORACLE WebLogic Server Administration Console 12c". The breadcrumb navigation shows "Home > Summary of JDBC Data Sources". The current page is titled "Create a New JDBC GridLink Data Source".

On the left side, there is a "Change Center" panel with a "Release Configuration" button. Below it is the "Domain Structure" tree, which includes "bifoundation_domain", "Domain Partitions", "Environment", "Deployments", "Services", "Messaging", "Data Sources", "Persistent Stores", "Foreign JNDI Providers", "Work Contexts", "XML Registries", "XML Entity Caches", "JCOM", and "Mail Sessions".

The main content area shows the "Select Targets" step of the wizard. It includes a "Back | Next | Finish | Cancel" navigation bar. Below the navigation bar, there is a text instruction: "You can select one or more targets to deploy your new JDBC data source. If you don't select a target, the data source will be created but not deployed. You will need to deploy the data source at a later time." The "Select Targets" section is divided into two panels: "Servers" and "Clusters".

In the "Servers" panel, the "AdminServer" target is selected with a checked checkbox. In the "Clusters" panel, the "bi_server1" target is selected under the "Part of the cluster" radio button. The "bi_cluster" target is not selected. At the bottom of the wizard, there is another "Back | Next | Finish | Cancel" navigation bar.



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