

# Oracle Cartridge WAS Datasource Configuration Guide

***PREPARED FOR - FRIT***

# Table of Contents

1. Synopsis .....	1
2. Procedure.....	2
2.1. Upload Driver File .....	2
2.2. Environment Variables .....	3
2.3. Access WebSphere Console .....	5
2.4. Configuring Oracle Security .....	6
2.5. Configuring Oracle JDBC Driver .....	8
2.6. Configuring Data-source.....	11
2.7. Testing Data-source .....	14
3. Reference Information .....	15

# 1. Synopsis

The purpose of this document is to present the guidance to configure a Oracle Datasource in the IBM WebSphere® Application Server cartridge to connect to the newly provisioned Oracle DB Tenant via the Oracle Cartridge.

This is extensively based off of the IBM Knowledge Center Article: "Configuring the WebSphere Application Server data source"

## 2. Procedure

It is first assumed that the application with the WAS cartridge and Oracle add-on cartridge has already been created.

### 2.1. Upload Driver File

For WebSphere to make use of the Oracle datasource, the Oracle JDBC driver Java Jar file must be first uploaded to the WAS Gear. First, acquire the correct JDBC driver from either the Oracle website or your Database administration team, then upload it to the gear to the '**\$OPENSIFT\_DATA\_DIR/profile/**' directory. The following below is a example run from the "git bash" terminal:

```
$ scp ojdbc6.jar 56a238594c9e6f5085000382@wastest02-  
test.example.com:/var/lib/openshift/56a238594c9e6f5085000382/app-root/data/profile/  
ojdbc6.jar 100% 3606KB 3.5MB/s 00:00
```

## 2.2. Environment Variables

SSH to your application using RHC tools:

```
$ rhc ssh -a wastest02
Connecting to 56a22db54c9e6fb13e0003c4@wastest02-test.example.com ...
The authenticity of host 'wastest02-test.example.com (10.11.12.13)' can't be
established.
RSA key fingerprint is 54:38:52:fd:53:2d:f5:da:34:c2:3b:c1:f4:8d:be:94.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'wastest02-test.example.com' (RSA) to the list of
known hosts.
WARNING! If you are not authorized to use this private network,
please disconnect immediately. Unauthorized access is prohibited
and will result in civil and/or criminal prosecution. Users expressly
consent to having their activities monitored.

*****

You are accessing a service that is for use only by authorized users.
If you do not have authorization, discontinue use at once.
Any use of the services is subject to the applicable terms of the
agreement which can be found at:
https://www.openshift.com/legal

*****

Welcome to OpenShift shell

This shell will assist you in managing OpenShift applications.

!!! IMPORTANT !!! IMPORTANT !!! IMPORTANT !!!
Shell access is quite powerful and it is possible for you to
accidentally damage your application. Proceed with care!
If worse comes to worst, destroy your application with "rhc app delete"
and recreate it
!!! IMPORTANT !!! IMPORTANT !!! IMPORTANT !!!

Type "help" for more info.
```

Once you have logged in, run the following command in the SSH session to retrieve the values of the Openshift application variables that are set by the Oracle Gear on creation with the values needed to connect to the Oracle database. Make sure to save this output, as it will be needed in later steps.

```
[wastest02-test.example.com 56a238594c9e6f5085000382]\> env | grep
"OPENSIFT_ORACLE_DB_"
OPENSIFT_ORACLE_DB_HOST=127.0.0.1
OPENSIFT_ORACLE_DB_REMOTE_HOST=testose200
OPENSIFT_ORACLE_DB_SCRIPT_LOC=/u02/app/oracle/frit/bin/frit_dba_cdb.pl
OPENSIFT_ORACLE_DB_USERNAME=adminTTbeCpx
OPENSIFT_ORACLE_DB_SSH_IDENTITY_PRIVATE=/usr/libexec/openshift/cartridges/ose2-
oracle-frb-cart/id_rsa
OPENSIFT_ORACLE_DB_SSH_IDENTITY_PUBLIC=/usr/libexec/openshift/cartridges/ose2-o
racle-frb-cart/id_rsa.pub
OPENSIFT_ORACLE_DB_TENANT_ID=TCDB_042
OPENSIFT_ORACLE_DB_SCRIPT_DELIMINATOR=@@
OPENSIFT_ORACLE_DB_PORT=3306
OPENSIFT_ORACLE_DB_SCRIPT_HOST_SERVICE_ACCOUNT=oseoradb
OPENSIFT_ORACLE_DB_SCRIPT_HOST=127.51.154.41
OPENSIFT_ORACLE_DB_SCRIPT_USER=oracle
OPENSIFT_ORACLE_DB_REMOTE_PORT=1521
OPENSIFT_ORACLE_DB_PASSWORD=DP1sZNB5p8J4
```

## 2.3. Access WebSphere Console

Using RHC tools, enable port forwarding for your application, so that the WAS administration console can be reached:

```
$ rhc port-forward -a wastest02
Checking available ports ... done
Forwarding ports ...
```

To connect to a service running on OpenShift, use the Local address

Service	Local		OpenShift
java	127.0.0.1:2809	=>	127.68.114.1:2809
java	127.0.0.1:8880	=>	127.68.114.1:8880
java	127.0.0.1:9043	=>	127.68.114.1:9043
java	127.0.0.1:9060	=>	127.68.114.1:9060
java	127.0.0.1:9080	=>	127.68.114.1:9080
java	127.0.0.1:9100	=>	127.68.114.1:9100
java	127.0.0.1:9443	=>	127.68.114.1:9443
java	127.0.0.1:9633	=>	127.68.114.1:9633
oracle	127.0.0.1:3306	=>	127.68.114.2:3306

Press CTRL-C to terminate port forwarding

Now, using your web browser of choice, proceed to the WAS login console. You will be prompted to provide your credentials to login, which by default are your LDAP credentials.



Figure 1: WAS Login Console

## 2.4. Configuring Oracle Security

Once you have logged in to the WAS console, using the left hand navigation menu go to **"Security"**  
→ **"Global Security"**



Figure 2: WAS Security Menu

Next select the **"Java Authentication and Authorization Service"** - > **"J2C authentication data"**

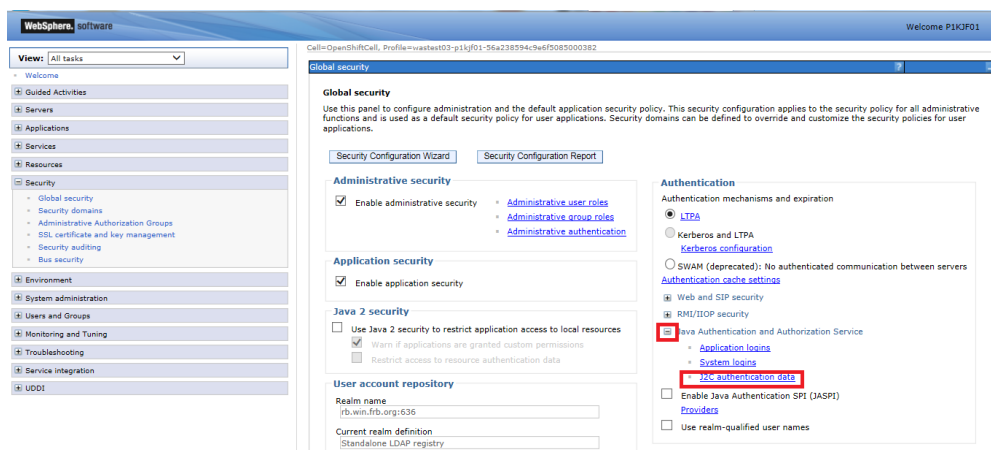


Figure 3: WAS Java Security



Click "New"

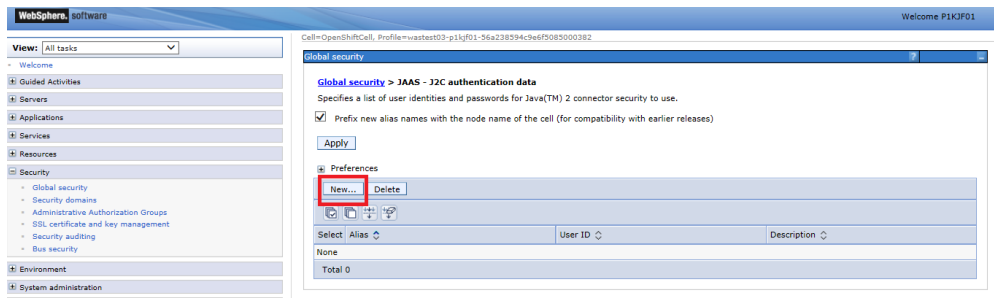


Figure 4: WAS New J2C Auth

Enter the Alias for the credentials, in this example "oracleDBCredentials", the Oracle User ID, and Password. The User ID and Password are found from the "\$OPENSIFT\_ORACLE\_DB\_USERNAME" and "\$OPENSIFT\_ORACLE\_DB\_PASSWORD" respectively found earlier. Then click "Ok"

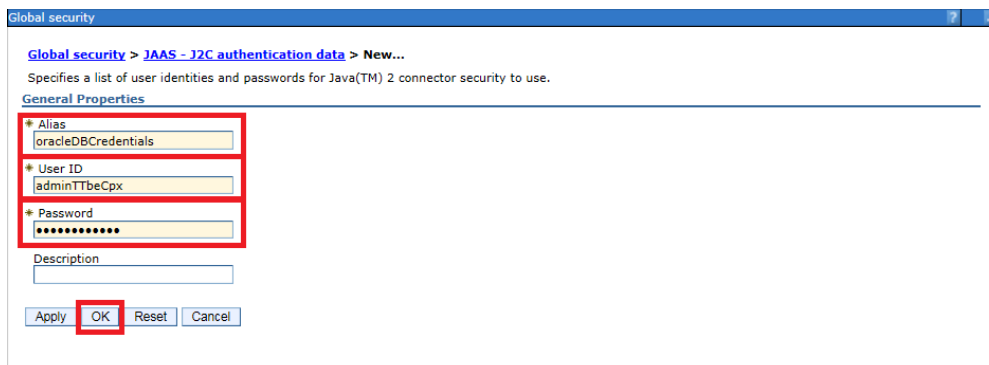


Figure 5: WAS Database Credentials

## 2.5. Configuring Oracle JDBC Driver

Using the left hand navigation menu go to "Resources" → "JDBC" → "JDBC Providers"

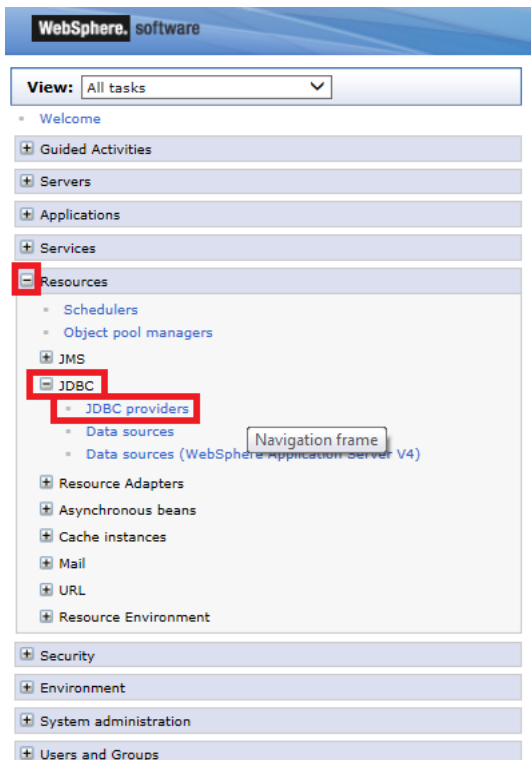


Figure 6: WAS JDBC Driver Menu

In the Scope section, choose the Node level from the drop-down list, and click "New"

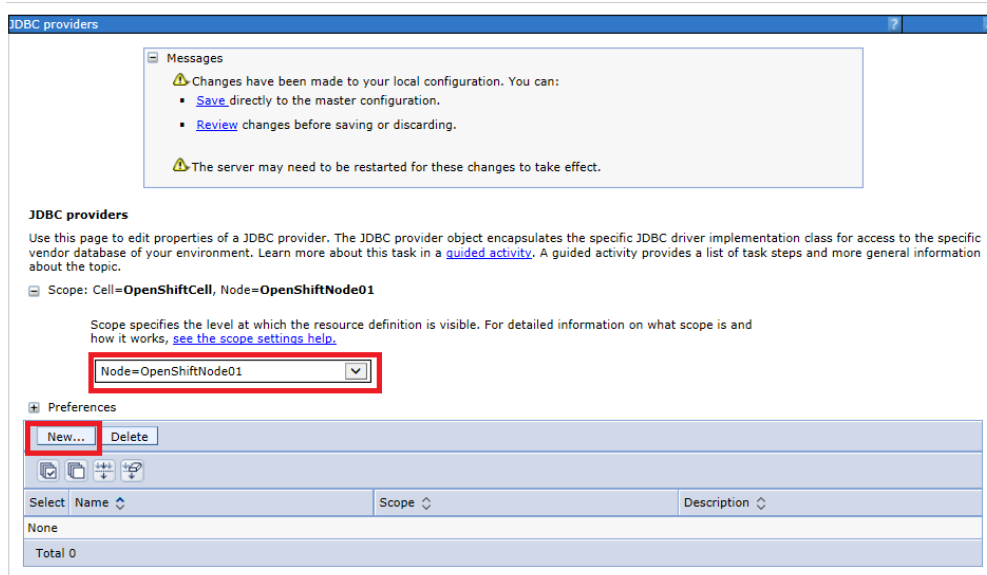


Figure 7: WAS New JDBC Driver

On the first page of the driver wizard select the following options from the drop downs. Lastly hit "Next"

- Database Type: **"Oracle"**
- Provider Type: **"Oracle JDBC Driver"**
- Implementation type: **"Connection pool data source"**

Create a new JDBC Provider

Create a new JDBC provider

Set the basic configuration values of a JDBC provider, which encapsulates the specific vendor JDBC driver implementation classes that are required to access the database. The wizard fills in the name and the description fields, but you can type different values.

Scope  
cells:OpenShiftCell:nodes:OpenShiftNode01

\* Database type  
Oracle

\* Provider type  
Oracle JDBC Driver

\* Implementation type  
Connection pool data source

\* Name  
Oracle JDBC Driver

Description  
Oracle JDBC Driver

Next Cancel

Figure 8: WAS JDBC Driver Step 1

On the next page, add the following variable to the text field highlighted **"\${USER\_INSTALL\_ROOT}"**, then hit "Next"

Create a new JDBC Provider

Create a new JDBC provider

Step 1: Create new JDBC provider

Step 2: Enter database class path information

Set the class path for the JDBC driver class files, which WebSphere(R) Application Server uses to define your JDBC provider. This wizard page displays a default list of jars and allows you to set the environment variables that define the directory locations of the files. Use complete directory paths when you type the JDBC driver file locations. For example: C:\SQLLIB\java on Windows(R) or /home/db2inst1/sqlib/java on Linux(TM).

Entries are separated by using the ENTER key and must not contain path separator characters (such as ';' or ':'). If a value is specified for you, you may click Next to accept the value.

Class path:  
\${ORACLE\_JDBC\_DRIVER\_PATH}/ojdbc6.jar

Apply

Directory location for "ojdbc6.jar" which is saved as WebSphere variable \${ORACLE\_JDBC\_DRIVER\_PATH}  
\${USER\_INSTALL\_ROOT}

Previous Next Cancel

Figure 9: WAS JDBC Driver Step 2

Confirm the selections on the summary page, and then if correct hit **"Finish"**

Create a new JDBC Provider

Step 1: Create new JDBC provider  
Step 2: Enter database class path information  
→ Step 3: Summary

**Summary**

Summary of actions:

Options	Values
Scope	cells:OpenShiftCell:nodes:OpenShiftNode01
JDBC provider name	Oracle JDBC Driver
Description	Oracle JDBC Driver
Class path	\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSource

Previous **Finish** Cancel

Figure 10: WAS JDBC Driver Step 3

Click **"Save"** to save your selections.

JDBC providers

Messages

⚠ The classpath attribute contains a variable that begins with a dollar sign (\$). Verify that this variable is defined, by clicking Environment > WebSphere Variables, for each physical machine that the Java Database Connectivity (JDBC) provider is used on.

⚠ 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.

Figure 11: WAS JDBC Driver Save

## 2.6. Configuring Data-source

Using the left hand navigation menu go to "Resources" → "JDBC" → "Data sources"

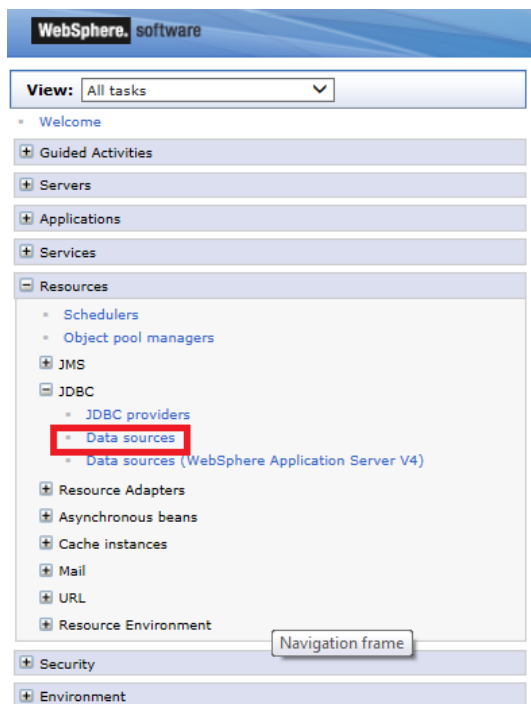


Figure 12: WAS Datasource Menu

In the Scope section, choose the Node level from the drop-down list, and hit "New"

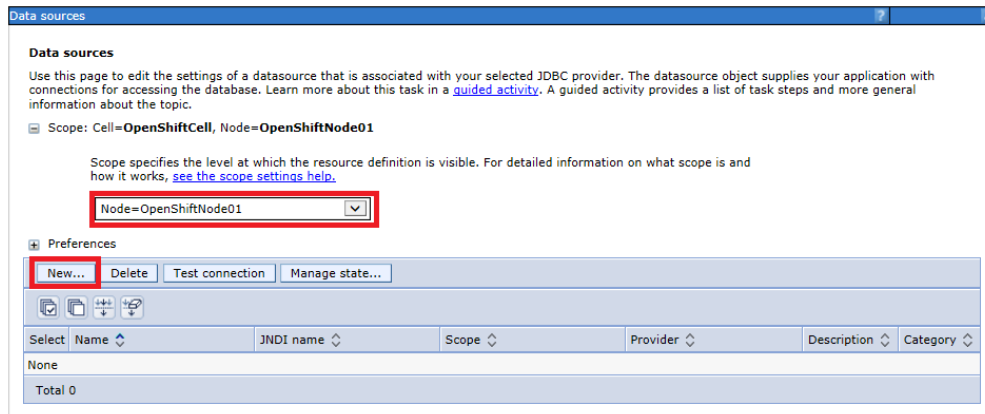


Figure 13: WAS New Datasource

Enter in the name for the Datasource, and the desired JNDI name, then hit "Next"

The screenshot shows the 'Create a data source' wizard with Step 1 selected. The left sidebar lists five steps: Step 1 (selected), Step 2, Step 3, Step 4, and Step 5. The main panel is titled 'Enter basic data source information' and contains instructions about JDBC providers. It includes a 'Scope' field with the value 'cells:OpenShiftCell:nodes:OpenShiftNode01'. Below this are two required fields: '\* Data source name' with the value 'OracleDS' and '\* JNDI name' with the value 'OracleDS'. A red box highlights these two fields. At the bottom, there are 'Next', 'Cancel', and 'Previous' buttons, with 'Next' highlighted by a red box.

Figure 14: WAS Datasource Step 1

Select the radio button for "Select an existing JDBC provider", select the provider you configured in the prior steps, and then hit "Next"

The screenshot shows the 'Create a data source' wizard with Step 2 selected. The left sidebar highlights Step 2. The main panel is titled 'Select JDBC provider' and contains instructions about selecting a provider. There are two radio buttons: 'Create new JDBC provider' (unselected) and 'Select an existing JDBC provider' (selected, highlighted with a red box). Below the selected radio button is a dropdown menu showing 'Oracle JDBC Driver', which is also highlighted with a red box. At the bottom, there are 'Previous', 'Next', and 'Cancel' buttons, with 'Next' highlighted by a red box.

Figure 15: WAS Datasource Step 2

In the next step input the connection string. Using the environment variables found earlier it should be of the format "jdbc:oracle:thin:@//\${OPENSIFT\_ORACLE\_DB\_REMOTE\_HOST}:\${OPENSIFT\_ORACLE\_DB\_REMOTE\_PORT}/\${OPENSIFT\_ORACLE\_DB\_TENANT\_ID}", you should enter in the values for the variables as has been done in the example "jdbc:oracle:thin:@//testose200:1521/TCDB\_042", and then hit "Next"

The screenshot shows the 'Create a data source' wizard with Step 3 selected. The left sidebar highlights Step 3. The main panel is titled 'Enter database specific properties for the data source' and contains instructions about database-specific properties. It includes a table with two columns: 'Name' and 'Value'. The first row has 'URL' in the 'Name' column and '//10.51.154.40:1521/TCDB\_042' in the 'Value' column, both highlighted with a red box. Below the table are two fields: '\* Data store helper class name' with the value 'Oracle11g data store helper' and a checked checkbox 'Use this data source if'. A tooltip for the checkbox explains its purpose. At the bottom, there are 'Previous', 'Next', and 'Cancel' buttons, with 'Next' highlighted by a red box.

Figure 16: WAS Datasource Step 3

Now select the authentication method set up previously from the drop downs for **"Component-managed authentication alias"** and **"Container-managed authentication alias"**, then hit **"Next"**

Create a data source

Step 1: Enter basic data source information

Step 2: Select JDBC provider

Step 3: Enter database specific properties for the data source

→ **Step 4: Setup security aliases**

Step 5: Summary

**Setup security aliases**

Select the authentication values for this resource.

Component-managed authentication alias  
OpenShiftNode01/oracleDBCredentials

Mapping-configuration alias  
(none)

Container-managed authentication alias  
OpenShiftNode01/oracleDBCredentials

Note: You can create a new J2C authentication alias by accessing one of the following links. Clicking on a link will cancel the wizard and your current wizard selections will be lost.

[Global J2C authentication alias](#)  
[Security domains](#)

Previous **Next** Cancel

Figure 17: WAS Datasource Step 4

Confirm the selections on the summary page, and then if correct hit **"Finish"**

Create a data source

Step 1: Enter basic data source information

Step 2: Select JDBC provider

Step 3: Enter database specific properties for the data source

Step 4: Setup security aliases

→ **Step 5: Summary**

**Summary**

Summary of actions:

Options	Values
Scope	cells:OpenShiftCell:nodes:OpenShiftNode01
Data source name	OracleDS
JNDI name	OracleDS
Select an existing JDBC provider	Oracle JDBC Driver
Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSource
URL	jdbc:oracle:thin:@//10.51.154.40:1521/TCDB_042
Data store helper class name	com.ibm.websphere.rsadapter.Oracle11gDataStoreHelper
Use this data source in container managed persistence (CMP)	true
Component-managed authentication alias	OpenShiftNode01/oracleDBCredentials
Mapping-configuration alias	(none)
Container-managed authentication alias	OpenShiftNode01/oracleDBCredentials

Previous **Finish** Cancel

Figure 18: WAS Datasource Step 5

Click **"Save"** to save your selections.

Data sources

Messages

- Changes have been made to the resources configuration for this scope. You must [save](#) these changes to the master configuration before performing this action.
- 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.

**Data sources**

Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource 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.

Scope: Cell=**OpenShiftCell**, Node=**OpenShiftNode01**

Scope specifies the level at which the resource definition is visible. For detailed information on what scope is and how it works, [see the scope settings help](#).

Node=OpenShiftNode01

Figure 19: WAS Save Datasource

## 2.7. Testing Data-source

Now select the checkbox next to the newly created datasource and click the **"Test connection"** button. The results of the test should be returned prompted. If it failed, recheck your steps.

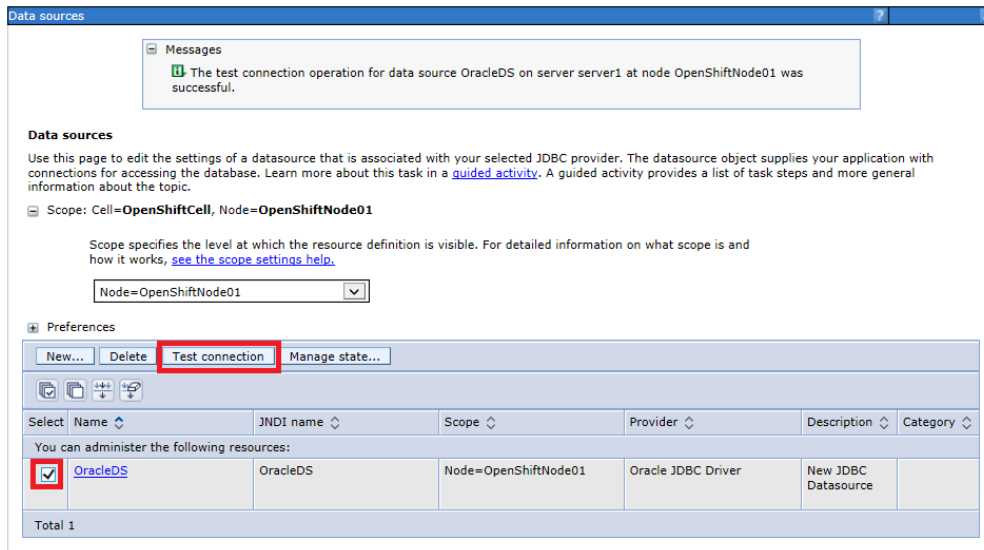


Figure 20: WAS Datasource Test



## 3. Reference Information

- [OpenShift WAS Cartridge](#)
- [OpenShift Oracle Cartridge](#)
- [IBM Knowledge Center Article](#)