

Oracle Cartridge Installation Guide

***PREPARED FOR - FRIT***

**Table of Contents**

1. Synopsis . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 1

2. Installation . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2

2.1. Setup OSE Environment . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2

2.2. Oracle Provisioning Script Requirements . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2

2.3. Service Account Access Requirements . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2

3. Cartridge Installation . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 3

3.1. Cartridge Extraction . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 3

3.2. Cartridge Environment Variables . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 3

3.3. SSH Key Exchange . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 4

3.4. Verifying environment variables and SSH Key Exchange . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 5

3.5. Cartridge OpenShift Registry Installation . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 5

4. Reference Information . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 7

**1. Synopsis**

The purpose of this document is to present the guidance to install and configure an Oracle

OpenShift Enterprise V2.2 cartridge. It is meant to be loaded into OpenShift from source code. The cartridge currently supports the following features:

• Creating an Oracle Database tenant instance via a call to a remote script

• Setting environment variables to allow web servers to call newly created tenant in a database

**2. Installation**

**2.1. Setup OSE Environment**

The setup of the OSE Environment can be accomplished as per your usual way of deploying broker and nodes. This could be via the OSE install script, or any other CM tools like Puppet and Ansible

**2.2. Oracle Provisioning Script Requirements**

This cartridge is in and of itself not responsible for configuring a remote tenant, instead that responsibility lies to a script that resides on a remote host that will be called by the install script when the gear is instantiated. Script is called via a remote ssh call as the **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_USER**. The script accepts username, password, and SID. It will then return:

**SUCCESS/F**[**AIL@@HOS**](mailto:@HOST)[**T@@PO**](mailto:@PORT)**R**[**T@@TENNANT\_ID**](mailto:@TENNANT_ID)

**2.3. Service Account Access Requirements**

The service account used to remotely login to the host with the Oracle provisioning script needs to be able to be to **sudo** without a password to the **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_USER**. This will require changes to the **/etc/sudoers** file on the **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST** The following shows an example configuration that will allow the **serviceaccountuser** user to call the

**/u02/app/oracle/frit/bin/frit\_dba\_cdb.pl** script with any arguments (the \*, wildcard flag) from the

**\*test.hosts.example.com\*** host without a password prompt (**NOPASSWD**).

**User\_Alias OSEORAGRP = serviceaccountuser**

**Host\_Alias OSEORAGRP\_HOSTS = test.hosts.example.com**

**Cmnd\_Alias OSEORAGRP\_CMNDS = /u02/app/oracle/frit/bin/frit\_dba\_cdb.pl\***

**OSEORAGRP OSEORAGRP\_HOSTS = (oracle) NOPASSWD: OSEORAGRP\_CMNDS**

**3. Cartridge Installation**

The cartridge can be installed as any other OSE cartridge.

**3.1. Cartridge Extraction**

Extract the zipped source code of the Oracle cartridge under

**/usr/libexec/openshift/cartridges**

You will also need to set the correct SELinux Context on the cartridge so that it is consistent with the rest of the cartridges on each node. This file context is:

**system\_u:object\_r:bin\_t:s0**

To set this context run the following command:

**chcon -R -u system\_u /usr/libexec/openshift/cartridges/ose2-oracle-frb-cart-frb-was\*/**

**3.2. Cartridge Environment Variables**

You now need to set the environment variables on each Node. Please note that the script does expect the password variable value to be a base64 hash of the plaintext password. Modify as needed:

**echo "oraclescripthost.example.com" > /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST**

**echo "serviceaccountuser" > /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST\_SERVICE\_ACCOUNT**

**echo "oracle" > /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SCRIPT\_USER**

**echo "/OracleProvisioningScript.sh" > /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SCRIPT\_LOC**

**echo "@@" > /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SCRIPT\_DELIMINATOR**

**echo "/usr/libexec/openshift/cartridges/ose2-oracle-frb-cart/id\_rsa" > /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SSH\_IDENTITY\_PRIVATE**

**echo "/usr/libexec/openshift/cartridges/ose2-oracle-frb-cart/id\_rsa.pub" > /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SSH\_IDENTITY\_PUBLIC**

|  |  |
| --- | --- |
| **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST** | This is the hostname that the remote Oracle configuration script resides on. |
| **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST\_SERV ICE\_ACCOUNT** | This is the service account user name that will be used for the ssh call to the **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST**. |
| **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_USER** | This is the user that the **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST\_SERV ICE\_ACCOUNT** will sudo to to run the **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_LOC**. |

|  |  |
| --- | --- |
| **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_LOC** | This is the location on **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST** where the remote configuration script resides. |
| **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_DELIMINAT OR** | This is the deliminator used in the return value coming from the remote configuration script. This should be set to '**@@**' |
| **OPENSHIFT\_ORACLE\_DB\_SSH\_IDENTITY\_PRI VATE** | This points to the location on the filesystem where the private ssh key that will be used to call the script on **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST** will reside. |
| **OPENSHIFT\_ORACLE\_DB\_SSH\_IDENTITY\_PUB LIC** | This points to the location on the filesystem where the public ssh key that will be used to call the script on **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST** will reside. |

**Optional Variable:**

**If on the deletion of the Oracle Database Datasource Gear you want the back end tenant PDB to remain in place, set the following optional variable, otherwise the tenant PDB will be deleted on gear teardown by a call to the**

\*

**OPENSHIFT\_ORACLE\_DB\_SCRIPT\_LOC.**

**echo "true" > /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_PRESERVE\_ON\_TEARDOWN**

Once the environment variables have been set, run the following to apply the appropriate file permissions:

**chmod 644 /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_\***

**3.3. SSH Key Exchange**

Now use the following command to create the needed SSH keys and exchange them with **OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST**. You will be asked twice to enter in the password for the [**OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST\_SERVICE\_ACCOUNT@OPENSHIFT\_ORACLE\_DB\_SCRIP**](mailto:OPENSHIFT_ORACLE_DB_SCRIPT_HOST_SERVICE_ACCOUNT@OPENSHIFT_ORACLE_DB_SCRIP) **T\_HOST**

**rm -rf $(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SSH\_IDENTITY\_PRIVATE)**

**ssh-keygen -t rsa -f $(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SSH\_IDENTITY\_PRIVATE) -N "" -q**

**ssh $(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SCRIPT\_USER)@$(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST) 'mkdir -p .ssh; chmod 700 .ssh'**

**cat $(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SSH\_IDENTITY\_PUBLIC) | ssh $(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SCRIPT\_USER)@$(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST) 'cat >> .ssh/authorized\_keys; chmod 600 .ssh/authorized\_keys'**

**chmod 755 $(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SSH\_IDENTITY\_PRIVATE)**

**chmod 755 $(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SSH\_IDENTITY\_PUBLIC)**

**3.4. Verifying environment variables and SSH Key**

**Exchange**

Now that the environment variables have been set and the SSH key exchange completed, it behooves the administrator to test the settings before proceeding further. Run the following command and confirm that no SSH, SSL, or user permissions errors are thrown.

**ssh -i $(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SSH\_IDENTITY\_PRIVATE) -o UserKnownHostsFile=/dev/null -o StrictHostKeyChecking=no $(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SCRIP\_HOST\_SERVICE\_ACCOUNT)@$(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SCRIPT\_HOST) "echo \"$(echo $(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SCRIP\_HOST\_SERVICE\_ACCOUNT\_ENC\_PASSWORD) | base64 -d)\" | sudo -u oracle -S $(cat /etc/openshift/env/OPENSHIFT\_ORACLE\_DB\_SCRIPT\_LOC) -op get\_pdb\_list"**

**3.5. Cartridge OpenShift Registry Installation**

Execute the following commands to add the cartridge to the node:

**cd /usr/libexec/openshift/cartridges**

**oo-admin-cartridge --action install --recursive --source /usr/libexec/openshift/cartridges**

**If you are updating the cartridge, make sure to remove the previously installed cartridge from the broker’s internal registry by running the following on the broker:**

\*

**oo-admin-ctl-cartridge -c deactivate --name frb-oracle-12.0**

**oo-admin-ctl-cartridge -c delete --name frb-oracle-12.0**

To make the cartridge available run this command from the broker:

**oo-admin-ctl-cartridge --activate -c import-node node.hostname**

**oo-admin-broker-cache --clear && oo-admin-console-cache --clear**

**4. Reference Information**

**OpenShift V2**

• [Cartridge Developers Guide](http://openshift.github.io/documentation/oo_cartridge_developers_guide.html)

• [How to expose more than one public port in cartridge](https://www.openshift.com/content/at-least-one-port-for-external-use-excluding-8080-please)