

Oracle Data Integration

Moving Data
to Transform Business



Oracle GoldenGate 12c (12.3.0.1) Hands-on-Labs (HOLs)

Location: EMEA Roadshow

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Prerequisites

Before you can start working with Oracle GoldenGate 12c (12.3.0.1), you need to meet some physical hardware and software requirements. These requirements are listed below.

The associated hands-on-labs with Oracle GoldenGate 12c (12.3.0.1) will require you to connect your web browser to the Ravello site (<https://cloud.ravellosystems.com>) to access your Ravello account. If you do not have a Ravello account, there will be a few virtual machines that attendees can use.

Hardware:

- Laptop computer with wireless network card
 - You will connect to the guest network at the Oracle office
 - Android or iOS tablets ***are not*** supported
- Minimum 8GB RAM, preferred 16GB RAM

Software:

- Windows 7 or Windows 10. (64bit only) ***or***
 - Supported Web browser (Chrome, Edge, Firefox)
- Mac OS X (64 bit) versions 10.8 through 10.11 ***or***
 - Supported Web browser (Chrome, Edge, Firefox)
- Linux hosts (64 bit)
 - Supported Web browser (Chrome, Edge, Firefox)

Access the software:

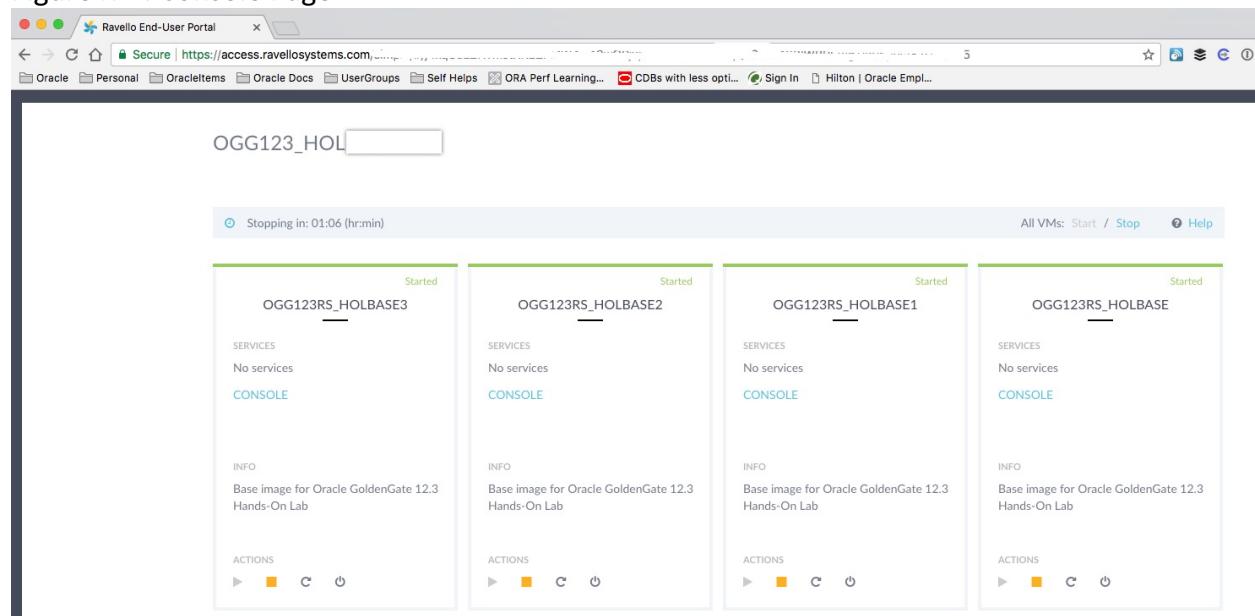
The Virtual box image that will be used for the Hands-on Labs will be delivered by Ravello. If you have a Ravello account, you will need to share your Ravello login with Product Management in order to get access to virtual machine image.

If you do not have a Ravello account, there will be a URL that is emailed to you at the start of the Hands-on Lab. After accessing the URL, you will be assigned a virtual machine number; then you can access the associated console via a standard web browser.

Ravello Access – URL

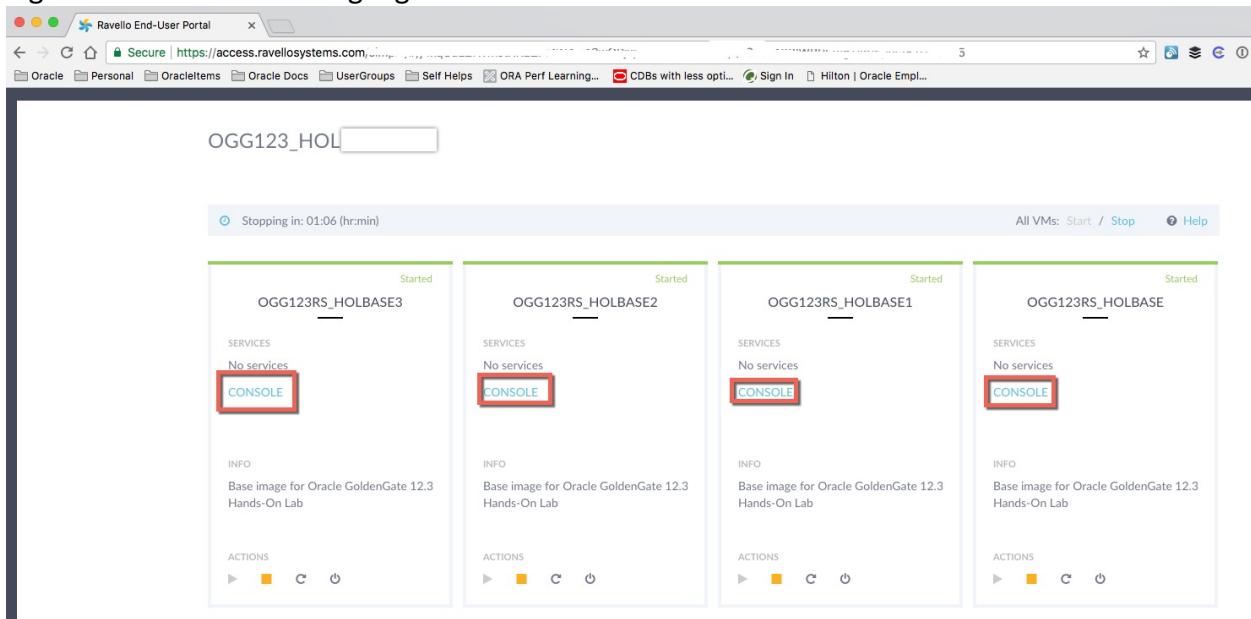
If you receive a URL to access the image via Ravello, you will click on the link and be taken to a simple management page where virtual machines are running. Machines will range in name from 0 to 59 (Figure R-1).

Figure R-1: Console Page



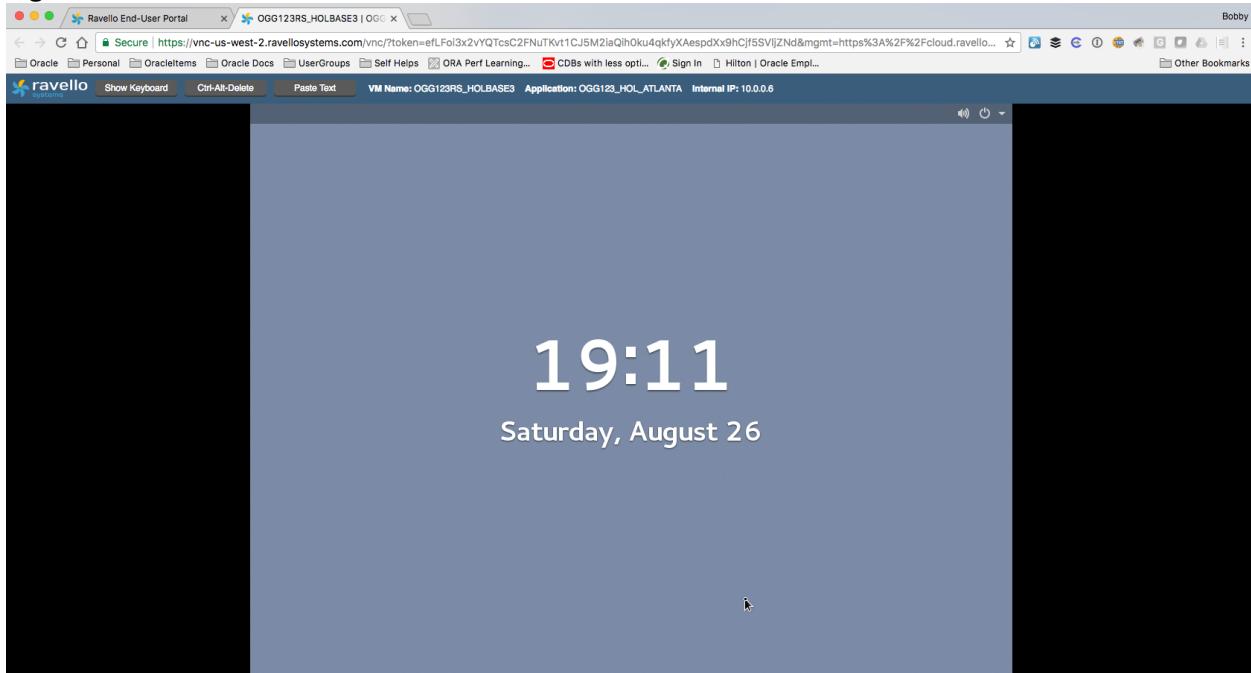
At the start of the Hands-on Lab, you will be assigned a number within the range of the running virtual machines. You will locate your virtual machine (OGG123RS_HOLBASE##). Once located, click on the CONSOLE link (Figure R-2).

Figure R-2: Console Link highlighted



After clicking the CONSOLE button, your web browser should open another tab or window that will take you to the console of the virtual box (Figure R-3). At this point, you are ready to start the hands-on labs. Click in the browser and click a button to wake up the VM.

Figure R-3:



Login Information

All passwords used with the hands-on-labs will be the same for all users. This password, unless otherwise specified, will be **welcome1**.

Username	Password
oracle	welcome1
c##ggate	ggate

Software

For the hands-on-labs to work, you will need some software. The following software is included on the Virtual Box images that is provided:

Software	Installed/Not Installed
Oracle Database 12c (12.2.0.1)	Installed
Oracle GoldenGate 12c (12.3.0.1)	Not Installed
Swingbench	Installed

Software Locations

The software that is installed are located at the following locations:

Software	Location
Oracle Database 12c (12.2.0.1)	/opt/app/oracle/product/12.2.0.1/dbhome_1
Swingbench	/opt/app/oracle/product/swingbench

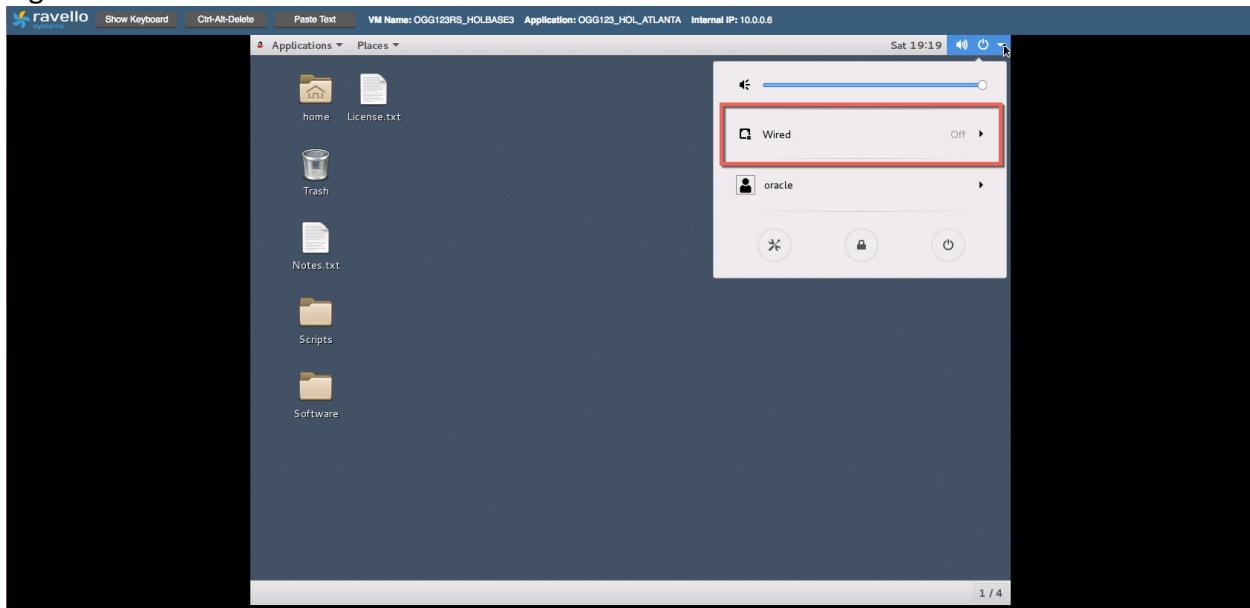
The software that is not installed are located at the following locations:

Software	Location
Oracle GoldenGate 12c (12.3.0.1)	/home/oracle/Desktop/Software

Fix Network within Ravello VM

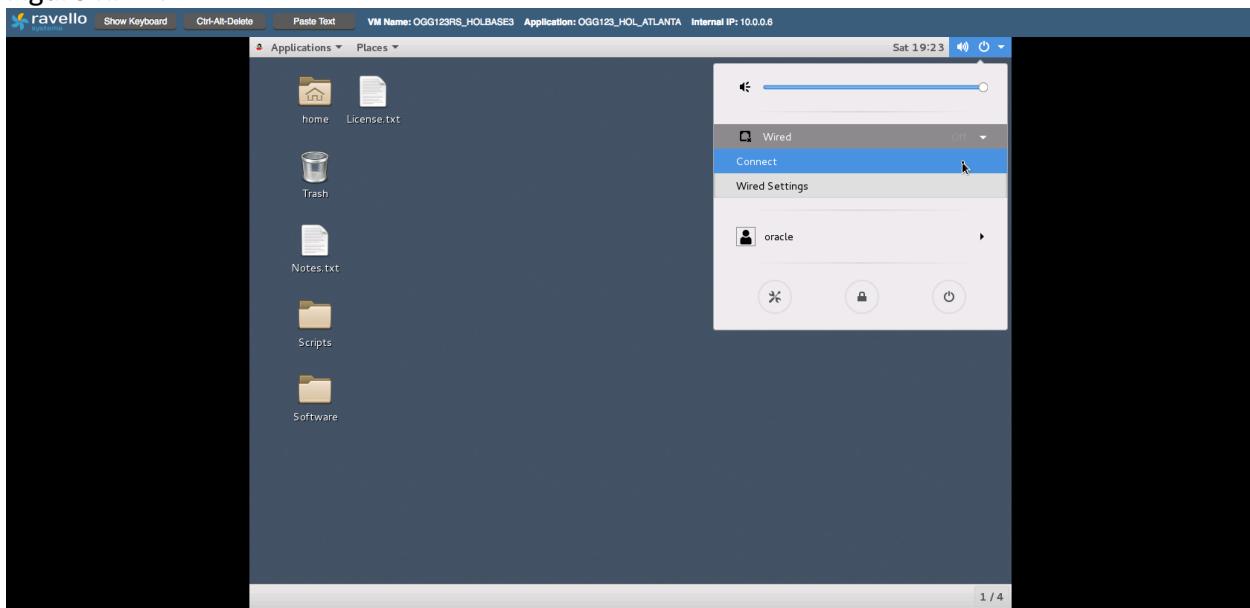
After starting logging into your Ravello VM, you need to check if you have network connectivity within the virtual machine. This done by checking the “**Wired**” setting in the upper right hand corner (Figure RN-1).

Figure RN-1:



Simply click on the setting to open a menu where you can select “**Connect**” to activate the network setting (Figure RN-2):

Figure RN-2:



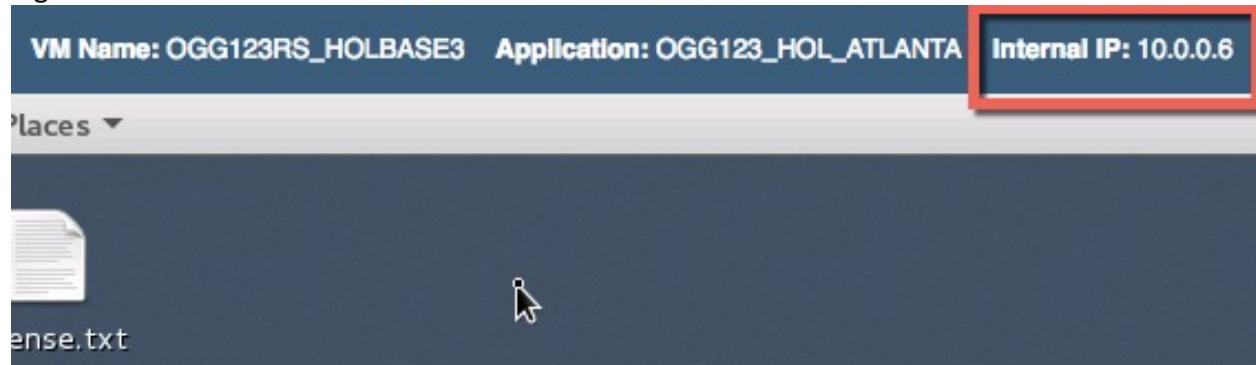
Fix */etc/hosts*:

After correcting the network connection issue with Ravello, you will need to update the */etc/hosts* file. This correction requires you to modify the IP Address in these files. You will be able to VI the */etc/hosts* file by using the following command:

```
# sudo vi /etc/hosts
```

To find your current IP Address within Ravello, you can look at the information bar at the top. You will see some information called “Internal IP” (Figure NF-1). This is the IP Address you will need to update in the */etc/hosts* file.

Figure NF-1:



Your IP address will be different and based on your Ravello Virtual Machine. Make updates as needed.

Starting Database

Once you are logged into your virtual machine, you will need to start the listener and the database (roadshow) along with the pluggable databases (PDB1 & PDB2) that will be used for the hands-on lab. This can be done by following these steps:

1. Open a terminal window (right mouse click)
2. Navigate to ~/Desktop/Scripts
3. Execute the `startup.sh` script

After the database is started, you should notice that everything is up and running.

Clean Up Archive Logs

After starting the database, you may need to do a little housekeeping, by removing some archive logs. To do this, you will need to follow the steps below:

1. Start `rman`, and remove pre-existing archive logs.

```
$ rman
RMAN> connect target /
RMAN> delete noprompt archivelog all;
RMAN> exit
```

Note: You can also use the `remove_archivelog_all.sh` script that is in `~/Desktop/Scripts` to perform the same operation.

Lab 1: Installing Oracle GoldenGate 12.3

Objective:

In this lab, you will walk through the Oracle Universal Installer for installing Oracle GoldenGate 12c (12.3.0.1). The software that you will be using is located on the desktop in a folder called Software. The following steps will get you started and walk you through the installation.

Time: 15 minutes

Steps:

1. Open a terminal and navigate to the Software folder. In the folder you should see a zip file named fbo_ggs_Linux_x64_services_shiphome.zip. You will need to unzip this file.

```
$ cd ~/Desktop/Software  
$ unzip ./fbo_ggs_Linux_x64_services_shiphome.zip -d .
```

Once the file is unzipped, you will have two items in the folder. One will be a directory and the other a zip file.

```
$ ls  
fbo_ggs_Linux_x64_services_shiphome.zip  
fbo_ggs_Linux_x64_services_shiphome
```

2. Navigate into the fbo_ggs_Linux_x64_services_shiphome/Disk1 directory.

```
$ cd ./fbo_ggs_Linux_x64_services_shiphome/Disk1  
$ ls
```

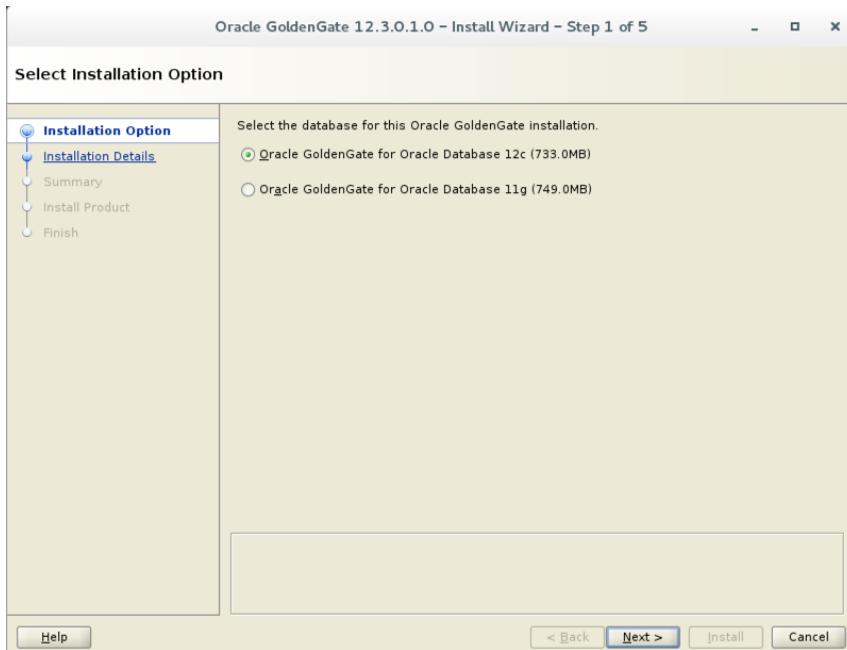
3. Begin the installation by executing the runInstaller command.

```
$ ./runInstaller
```

At this point, you should see the following screen(s) when the installer starts (Figure 1).

Figure 1 is the first step in a five-step process for installing Oracle GoldenGate 12c (12.3.0.1). On this step, you have the option for installing Oracle GoldenGate 12c against an Oracle Database 11g or 12c. For the purpose of the hands-on-lab, you will be installing against an Oracle Database 12c (12.2.0.1.0).

Figure 1: Step 1 of the Install Wizard



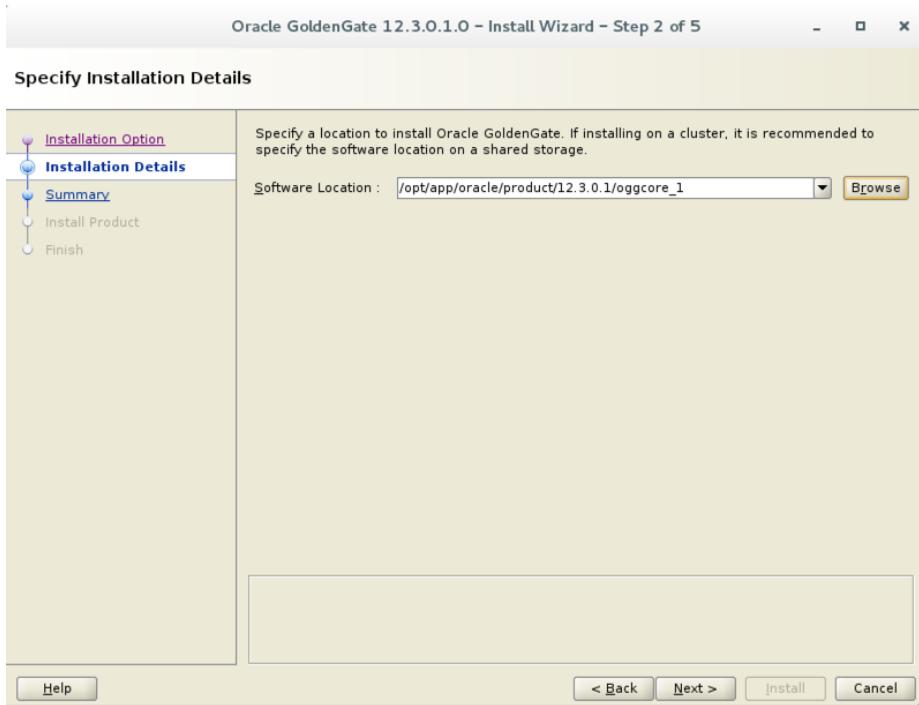
After making the selection on what type of installation you want to do; click Next.

4. On step 2 of the installation, you will need to provide an installation path for the Oracle GoldenGate 12c (12.3.0.1) software. In Figure 2, you will notice the path is off the /opt directory. This is where the Oracle Database 12c is installed as well. For this lab, it's suggested that you use the same path structure. Enter the full path and click Next.

Suggested Software Location (OGG_HOME):

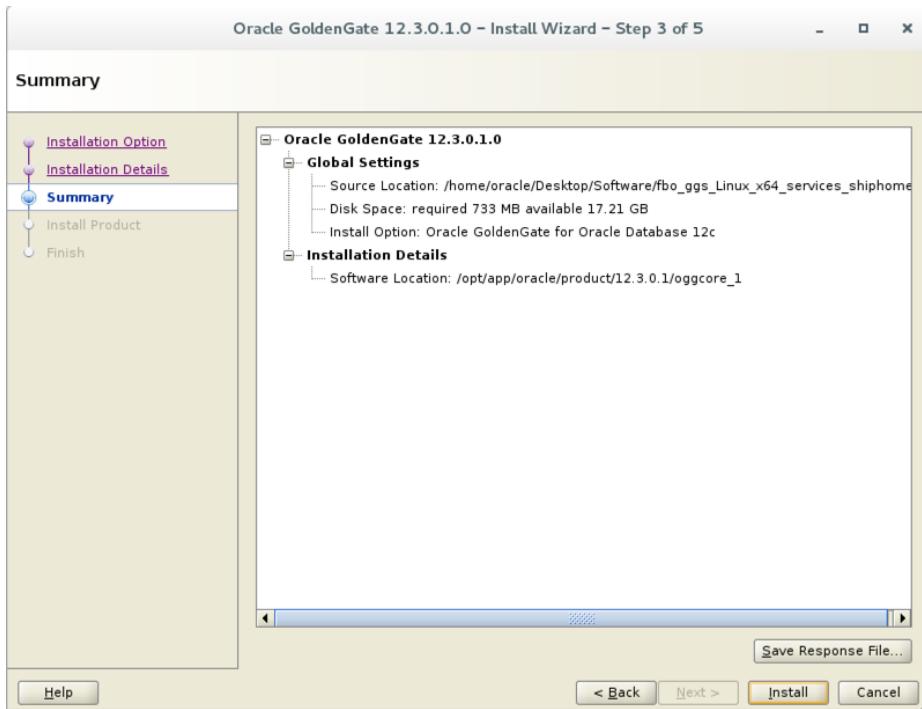
```
/opt/app/oracle/product/12.3.0.1/oggcore_1
```

Figure 2: Step 2 of Install Wizard



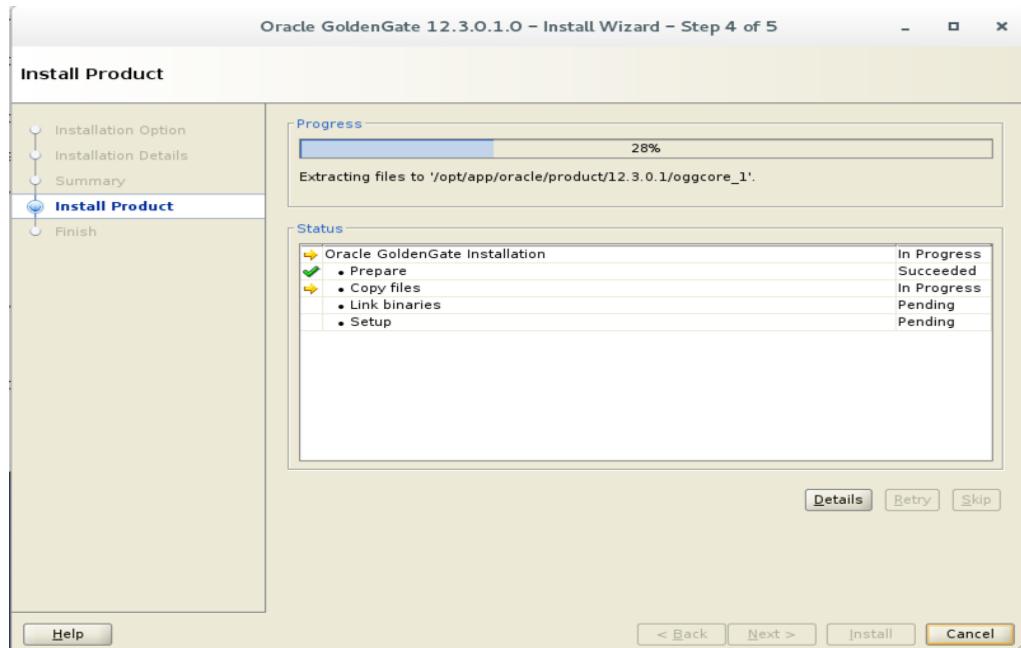
5. On step 3 of the installation wizard, you are presented with the Summary page. Make sure everything is as you want them to be and click Install.

Figure 3: Step 3 of Install Wizard



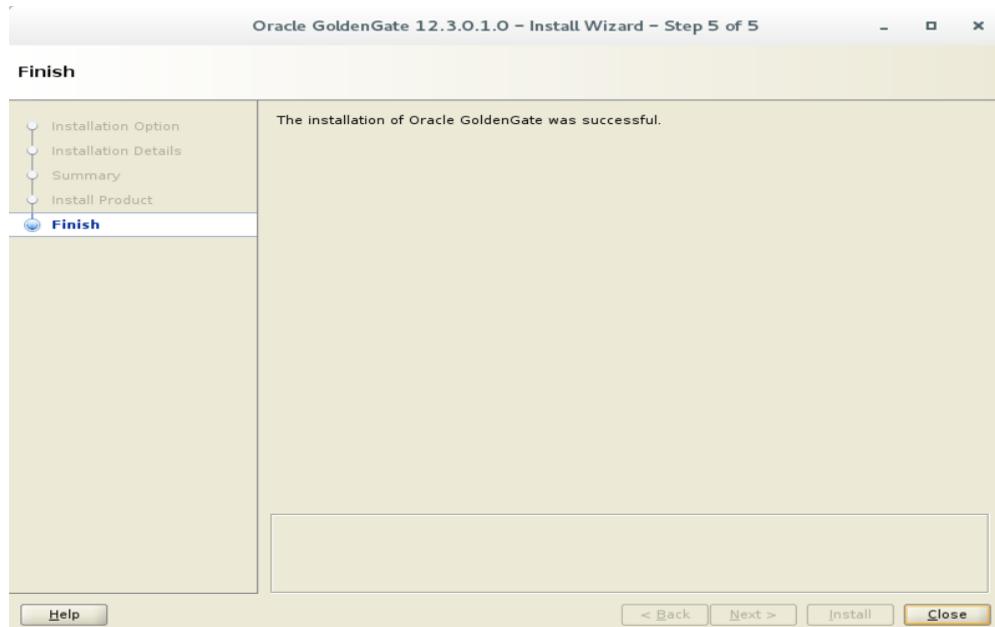
6. After clicking Install, the installation wizard changes to the Install Product step. Here is where you can watch the installation process if you wish.

Figure 4: Step 4 of Install Wizard



7. Once the installation is complete, you will end up on the Finish page. At this point, you can click the Close button to exit the installation wizard.

Figure 5: Step 5 of Install Wizard



Lab 2: Configuring Service Manager and First Deployment

Objective:

Deployments are a new concept with Oracle GoldenGate 12c (12.3.0.1). This concept will allow an organization to run multiple Oracle GoldenGate instances against a single Service Manager. This lab will walk you through how to create one or more deployments from a single Oracle GoldenGate 12c (12.3.0.1) home.

Time: 30 mins

Steps:

1. Navigate to your newly installed Oracle GoldenGate 12c Home and enter the bin directory. This may be the recommended OGG_HOME or a different home of your choosing when you did the install.

```
$ cd /opt/app/oracle/product/12.3.0.1/oggcore_1/bin
```

2. Locate and run the file oggca.sh. This file is the configuration assistant for configuring deployments.

```
$ ./oggca.sh
```

3. Once the configuration wizard starts (Figure 2-1), you will be presented with the first step of the configuration process. On this screen, you will configure the Service Manager. Items that you need to provide are:

- a. Create New Service Manager

For a new Service Manager, you will need to provide a deployment directory to store items related to the Service Manager.

Suggested Service Manager directory:

```
/opt/app/oracle/gg_deployments/ServiceManager
```

- b. Provide the Listening Hostname/Address

By default this will populate with the hostname of the server where the configuration assistant is ran.

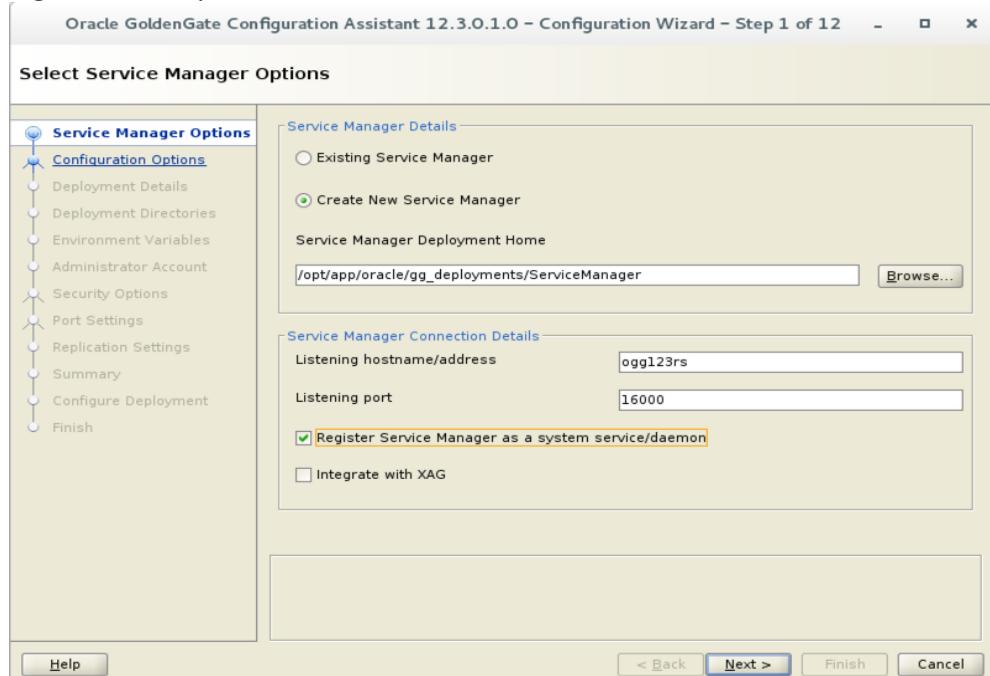
c. Provide a Listening Port

By default the port is set to zero (0), this is to allow the user running the configuration assistant to provide an open port of their choice.

d. Select whether or not the Service Manager should be ran as an operating system service (requires root access) or included in a Grid Infrastructure using an XAG agent.

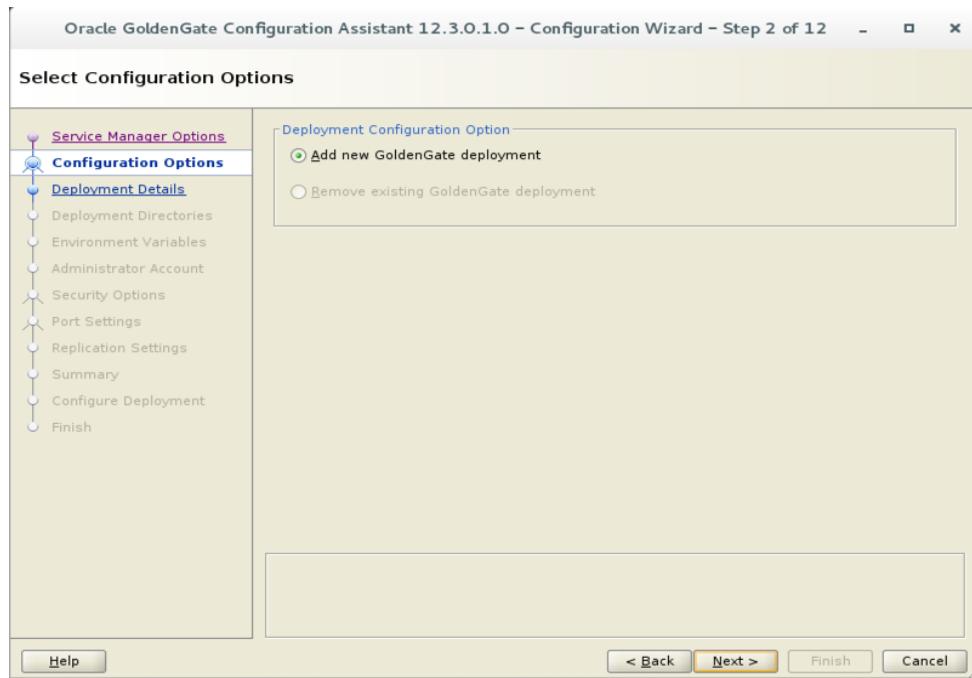
Once these options are selected then, you can click Next.

Figure 2-1: Step 1 in OGGCA



4. On step 2 (Figure 2-2) of the configuration assistant, you are presented with options for deployments. Since this is the first deployment on the system, you will only have one option. Take the default and click Next.

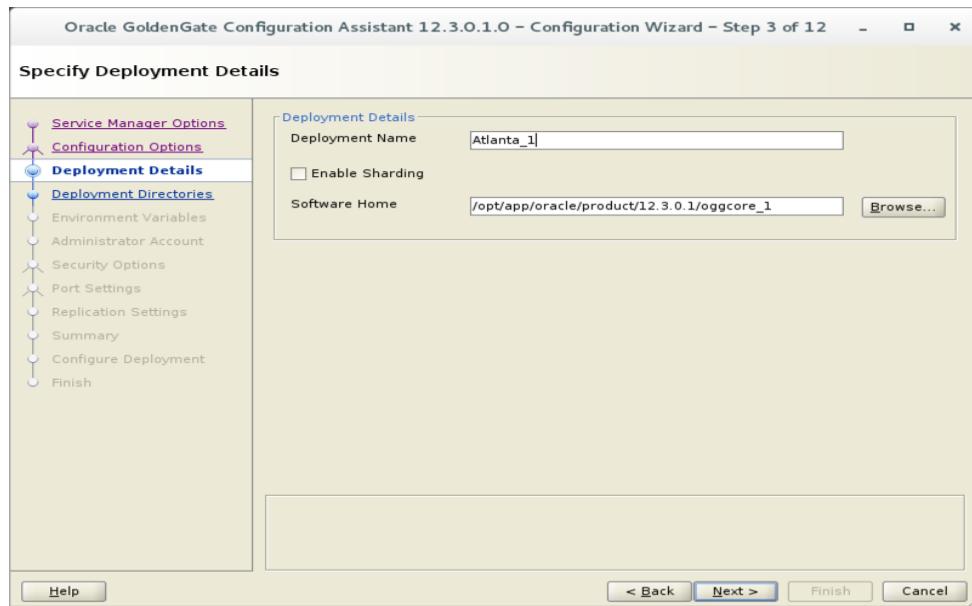
Figure 2-2: Step 2 in OGGCA



5. On step 3 (Figure 2-3), you will provide the deployment details. You will need to provide a deployment name and the OGG_HOME is selected by default. If the wrong OGG_HOME is listed; use the Browse button to correct it.

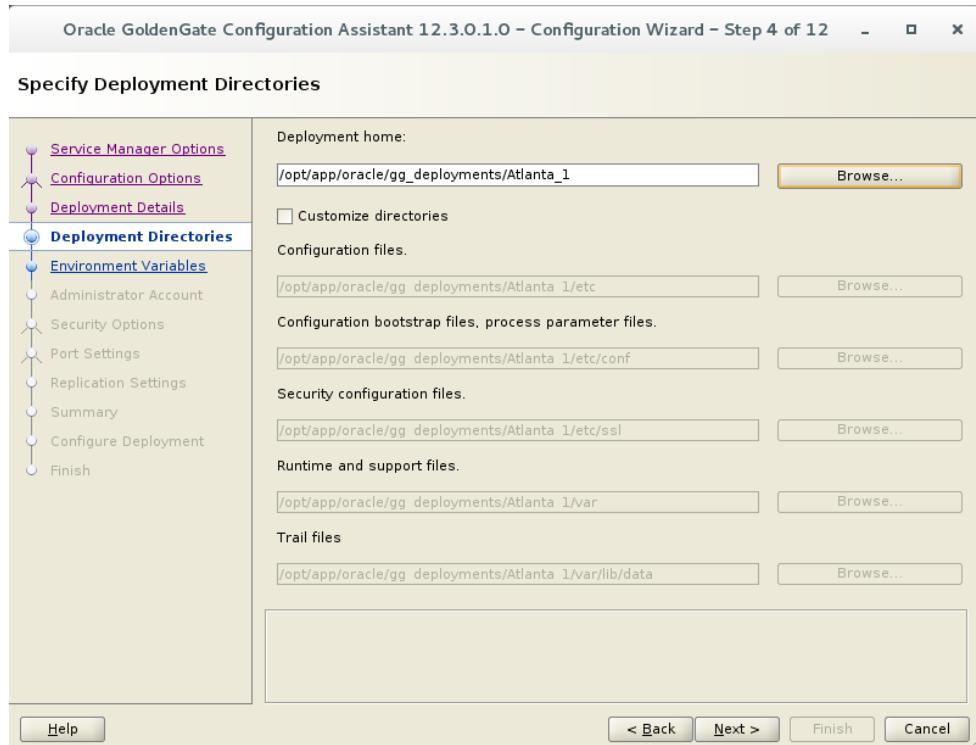
This will be your first deployment under the Service Manager. You can name the deployment whatever you like. For this lab, it's suggested to use a city name which will make the deployment name like "Atlanta_1".

Figure 2-3: Step 3 in OGGCA



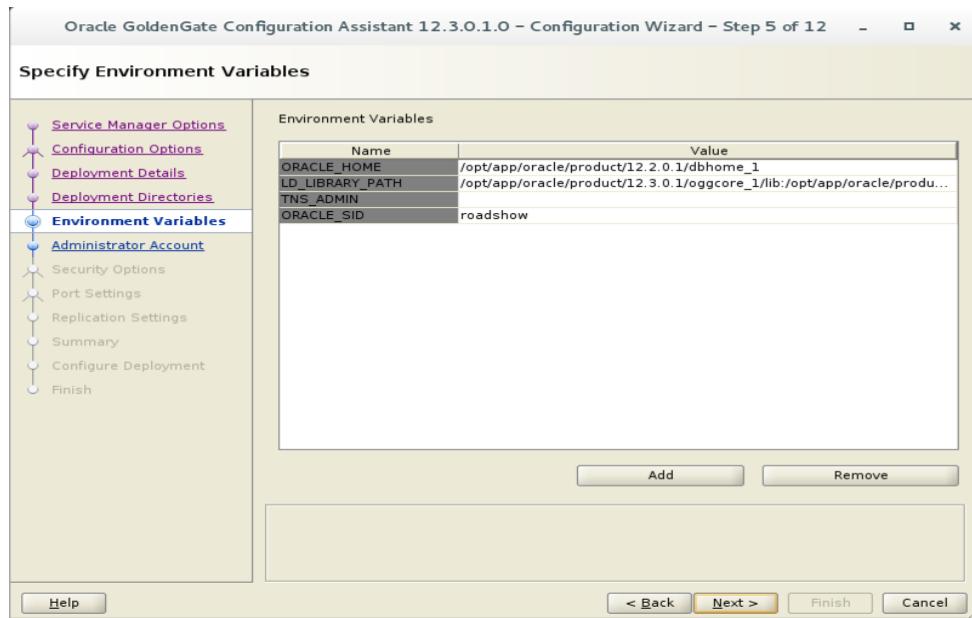
6. On the next step, you will be able to provide the deployment home for this deployment. There is also an option to customize the deployment directories. For the purpose of this lab, provide a default directory structure (Figure 2-4).

Figure 2-4: Step 4 in OGGCA



7. Next, the OGGCA wizard will ask you for environment variables. Environments variables are critical to the setup of deployments. On this screen, you can also add or remove environment variables if desired.

Figure 2-5: Step 5 in OGGCA



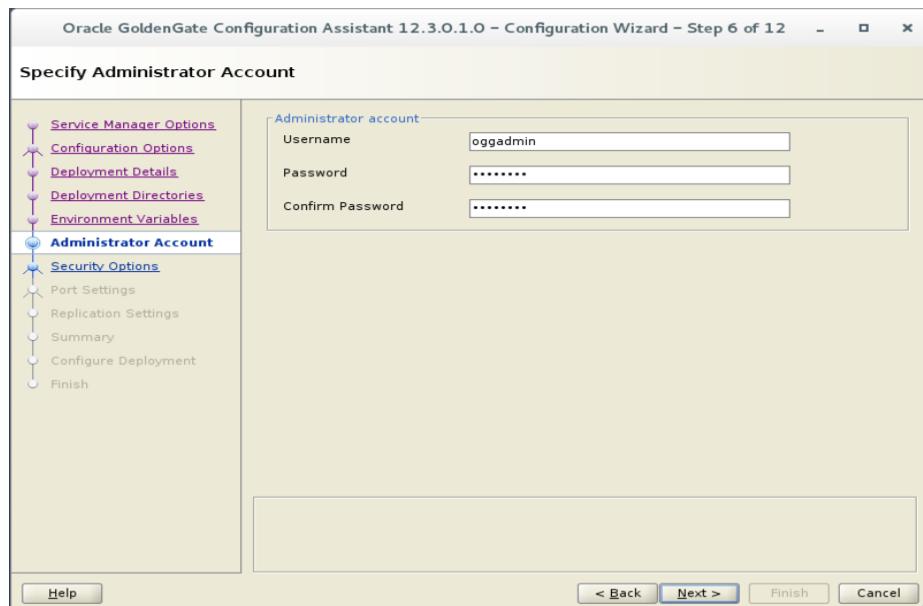
8. Next, you are being asked to provide an Administrator account. This account will be used to login to the Service Manager and additional Microservices that are running. Each deployment within the same Service Manager must use the same Administrator account and password. For ease of use during future labs, ensure that you create an Administrator account that you can remember.

Recommend setting it something like this:

Username: *oggadmin*

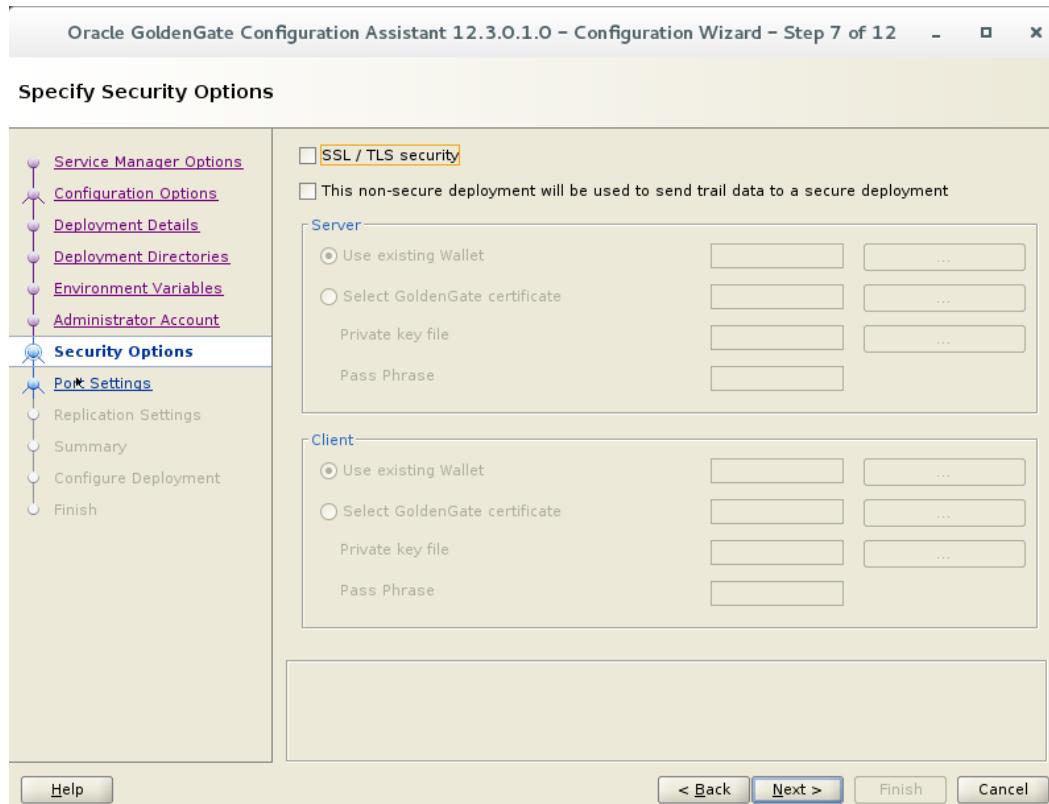
Password: *welcome1*

Figure 2-6: Step 6 in OGGCA



9. On the next screen, you can provide additional security information. This security information screen allows you to provide location of wallets and certificates to be used in the configuration of the deployment. For this lab, you will not be using certificates, so **uncheck** the option SSL/TLS Security. Click Next.

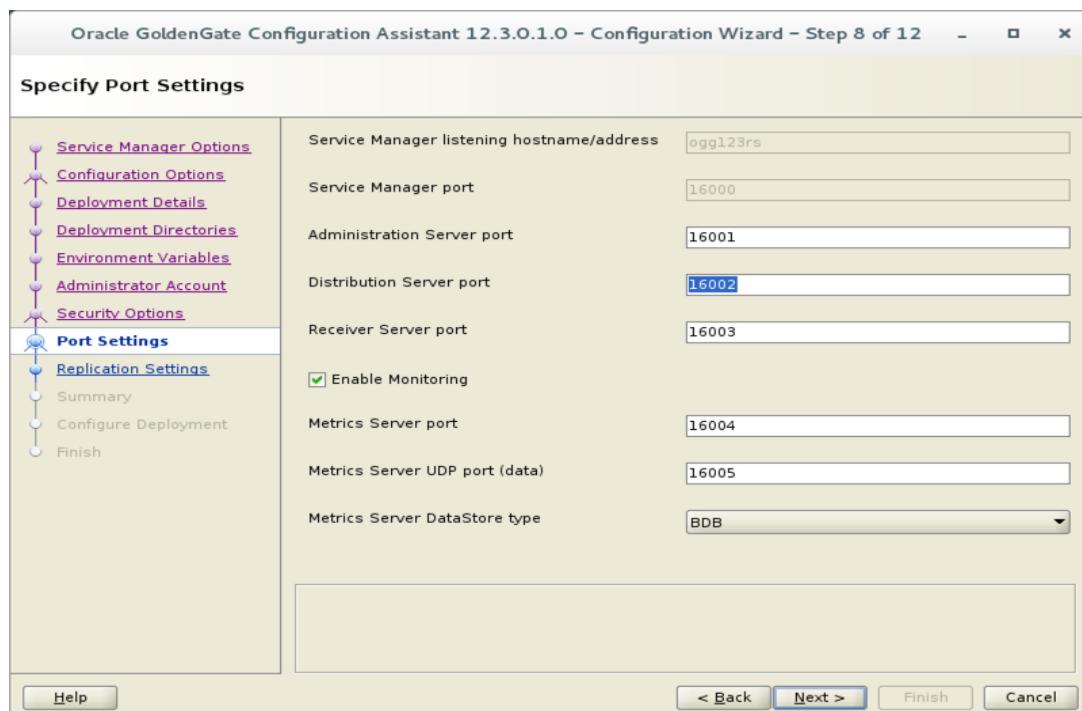
Figure 2-7: Step 7 in OGGCA



10. The next screen, provides you with what needs to be configured for the Microservices that you will be working with. For the Administration Server, Distribution Server, Receiver Server, and Performance Metric Server, you will provide port numbers that these servers will run on. Ideally, the port numbers should be inline with the port number that the Service Manager is running on.

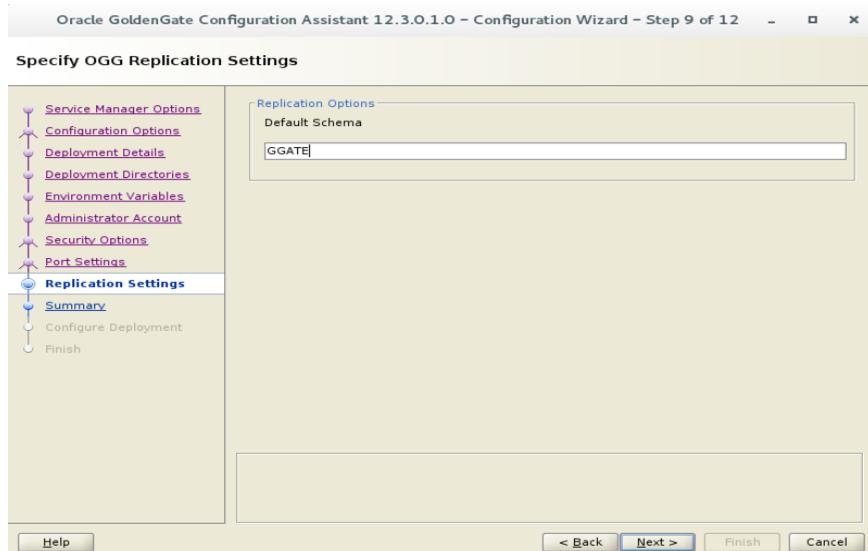
Note: If you select the Enable Monitoring option, there are licensing implications that require you to own a license of Oracle GoldenGate Management Pack.

Figure 2-7: Step 8 of OGGCA



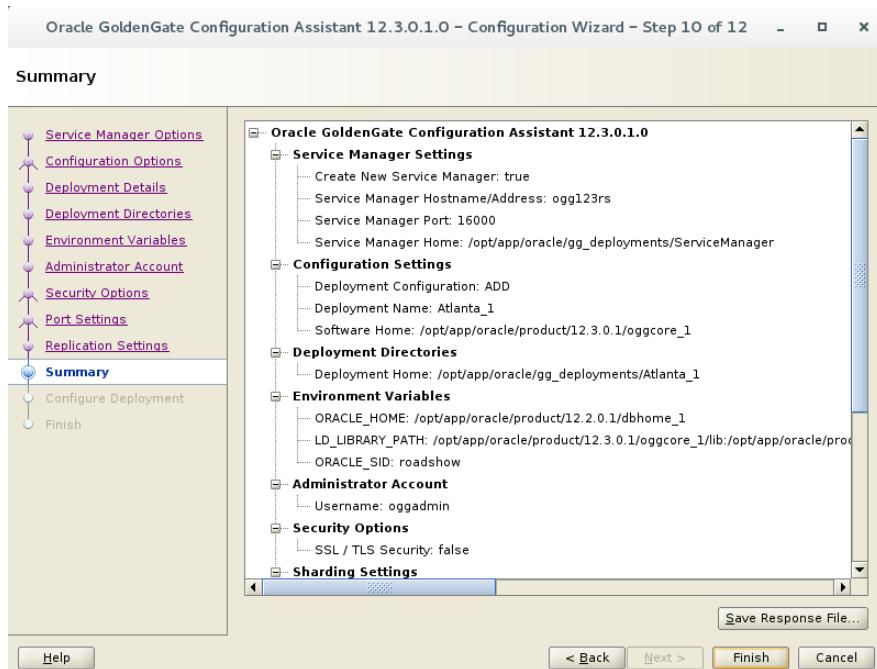
11. Next, you are asked to provide the Oracle GoldenGate Schema name. This is the GGSHEMA setting that will get populated into the GLOBALS file.

Figure 2-8: Step 9 of OGGCA



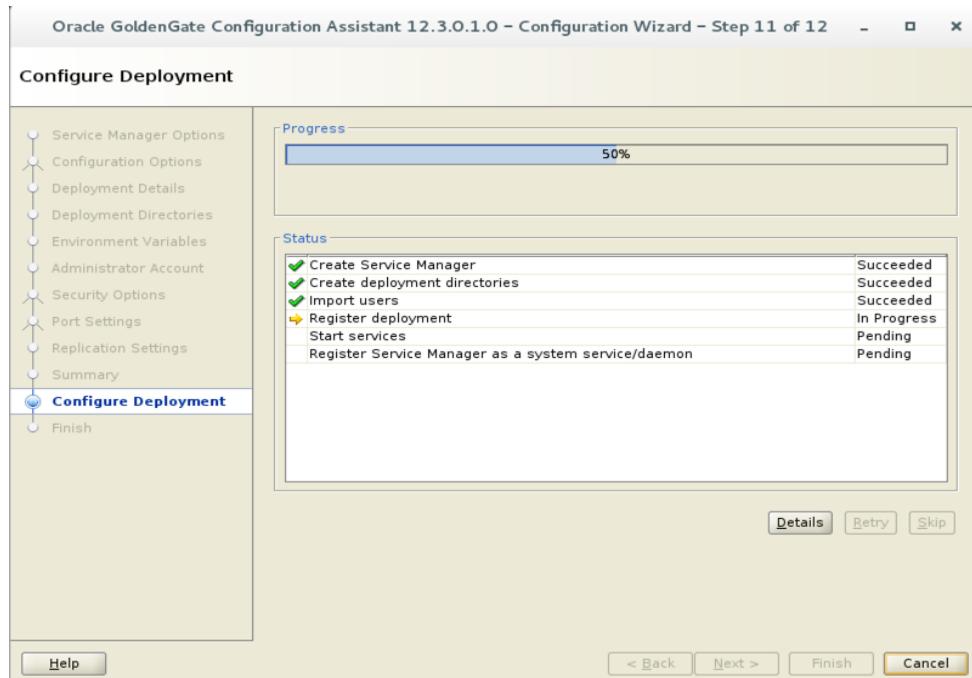
12. Lastly, you will be presented with the Summary screen. When you click Finish, the deployment will be configured.

Figure 2-9: Step 10 of OGGCA

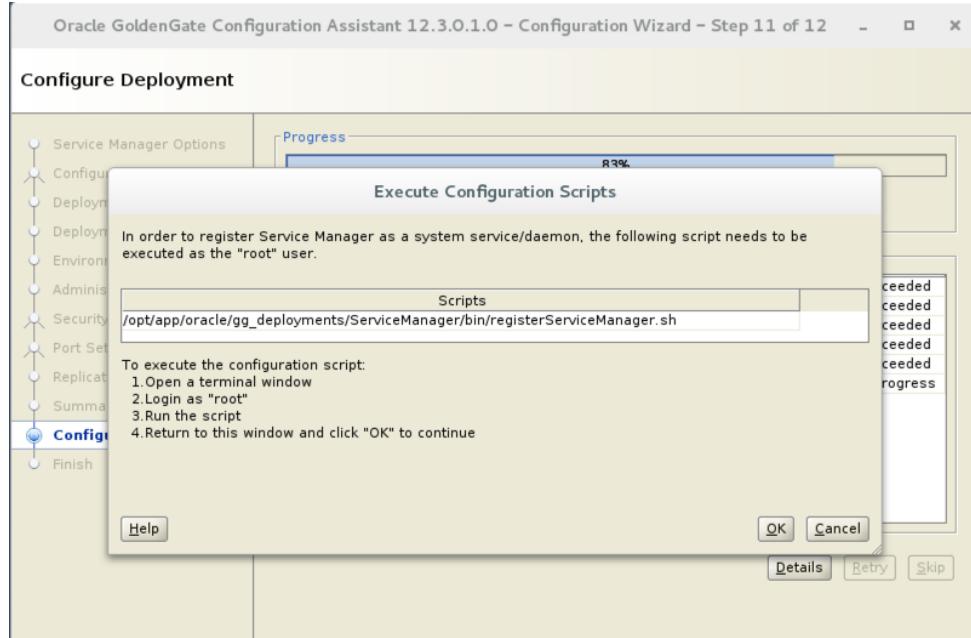


13. After clicking Finish on the Summary screen, the OGGCA moves to the Configure Deployment screen.

Figure 2-10: Step 11 of OGGCA

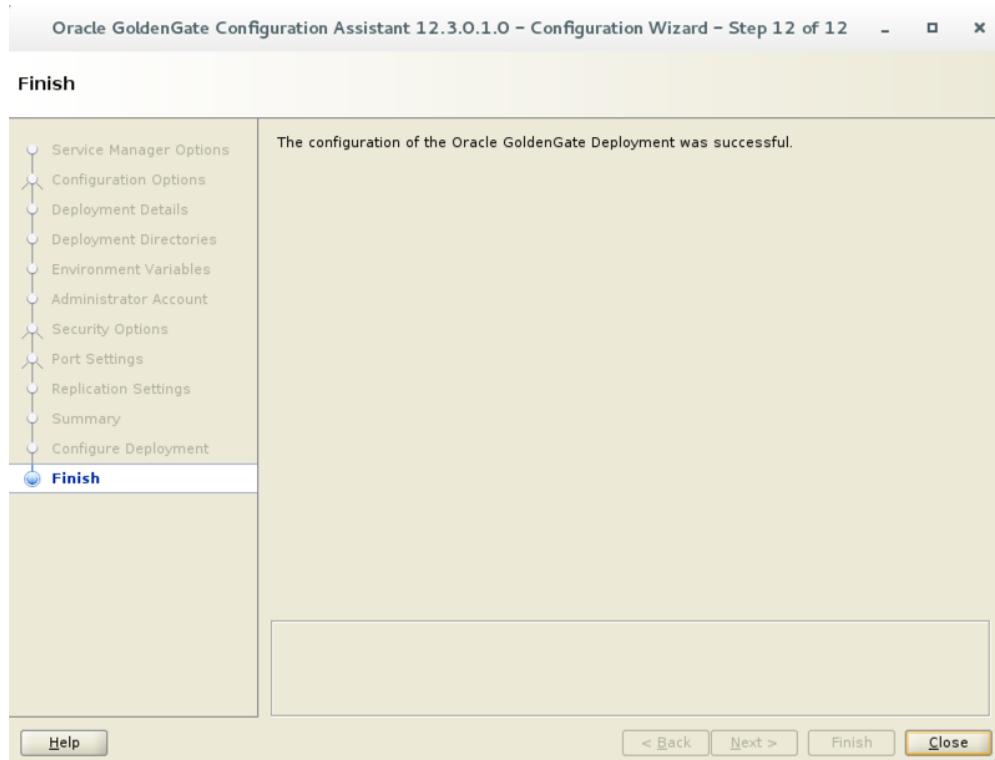


- a. The last step of Configuring Deployment is to register Service Manager with the operating system. In order to do this, you must have root access. On the HOL system, the root account password is welcome1. Root can also be accessed by using sudo.



14. After the deployment is complete, you will end up on the Finish page. At this point, you are done with making your first deployment to be used within Oracle GoldenGate 12c (12.3.0.1).

Figure 2-11: Step 12 of OGGCA



Lab 3: Configuring Second or More Deployments

Objective:

This lab will build upon the last lab. You will create a second deployment which will be used as a target site for replication.

Steps:

1. Navigate to your newly installed Oracle GoldenGate 12c Home and enter the bin directory. This may be the recommended OGG_HOME or a different home of your choosing when you did the install.

```
$ cd /opt/app/oracle/product/12.3.0.1/oggcore_1/bin
```

2. Locate and run the file oggca.sh. This file is the configuration assistant for configuring deployments.

```
$ ./oggca.sh
```

3. Once the configuration wizard starts (Figure 3-1), you will be presented with the first step of the configuration process. On this screen, you will use an existing Service Manager. Items you need to provide are:

- a. Existing Service Manager

For an existing Service Manager, make sure you select the correct radio button.

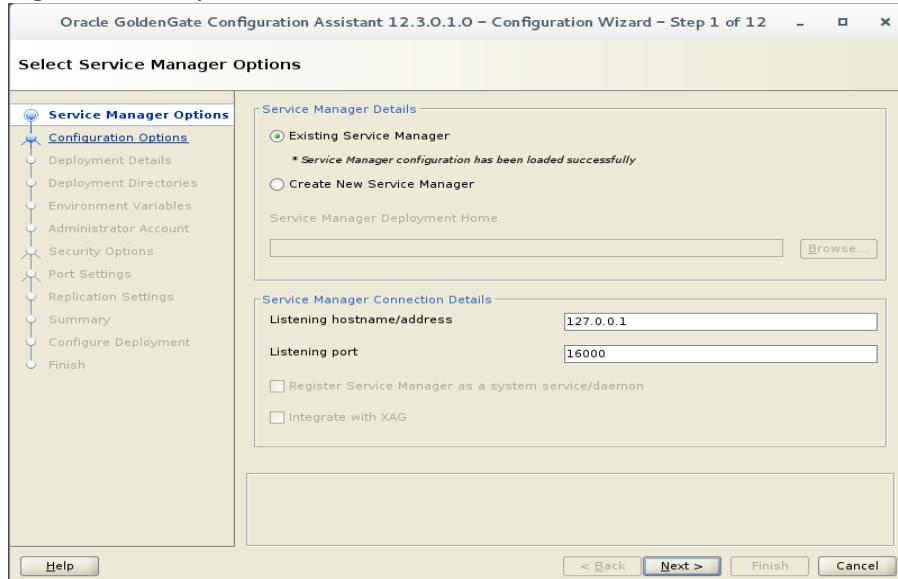
- b. Provide the Listening Hostname/Address

By default this will populate with the hostname as being 127.0.0.1. This is expected and as designed.

- c. Provide a Listening Port

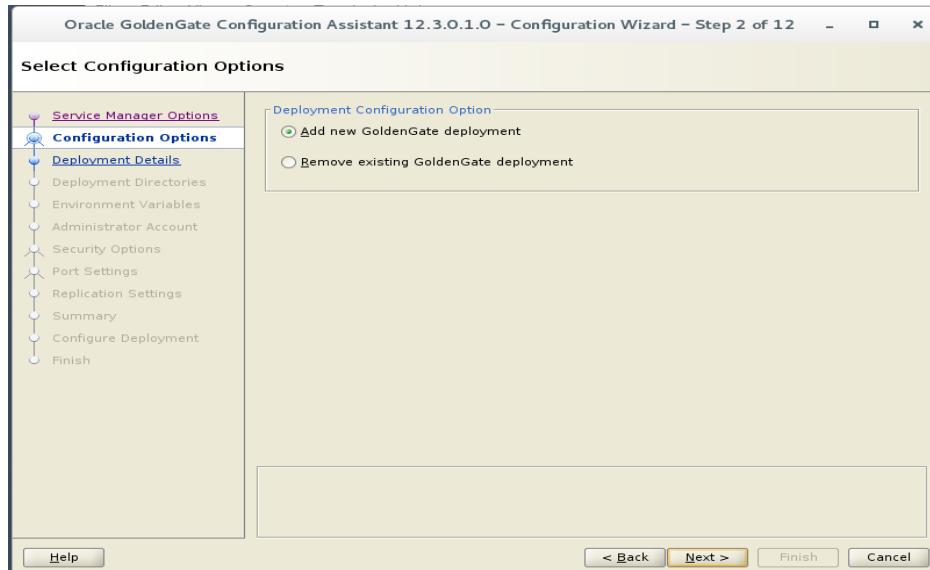
This should be the already configured Service Manager port number. Do not change this. If you are unsure of what the port number is, then refer to the previous lab on how to configure the Service Manager.

Figure 3-1: Step 1 of OGGCA.sh



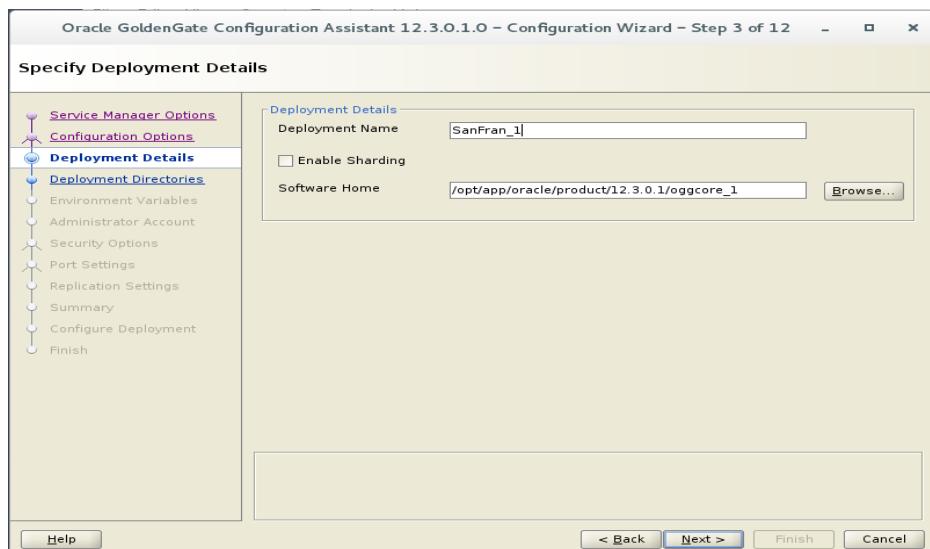
- On the next step, you will be given the choice on either adding or removing deployments (Figure 3-2). Since this is going to be an additional deployment on the same host, ensure you select the Add option.

Figure 3-2: Step 2 of OGGCA.sh



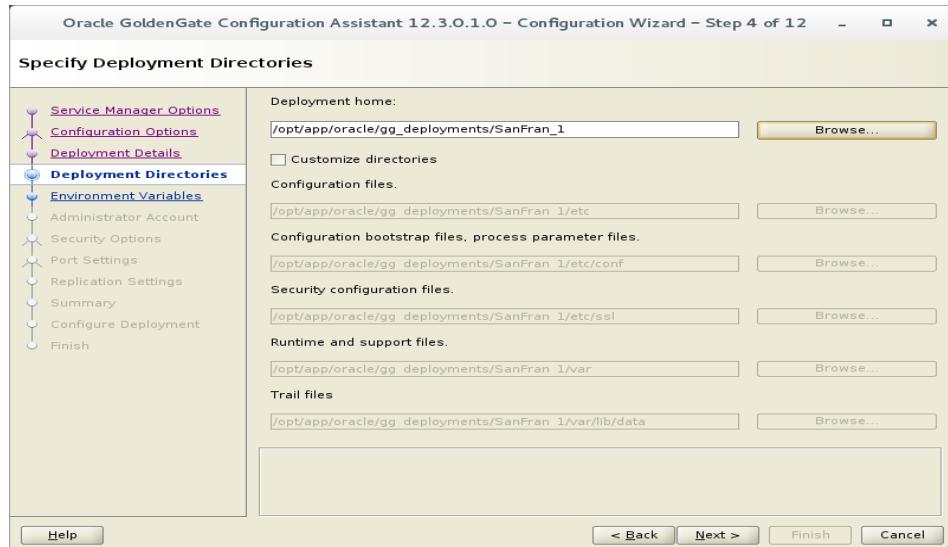
- On the next step, you will provide the deployment details and the software home where Oracle GoldenGate 12c (12.3.0.1) resides. The Software Home should already be populated. The only thing you need to provide is the name of the second deployment (Figure 3-3).

Figure 3-3: Step 3 of OGGCA.sh



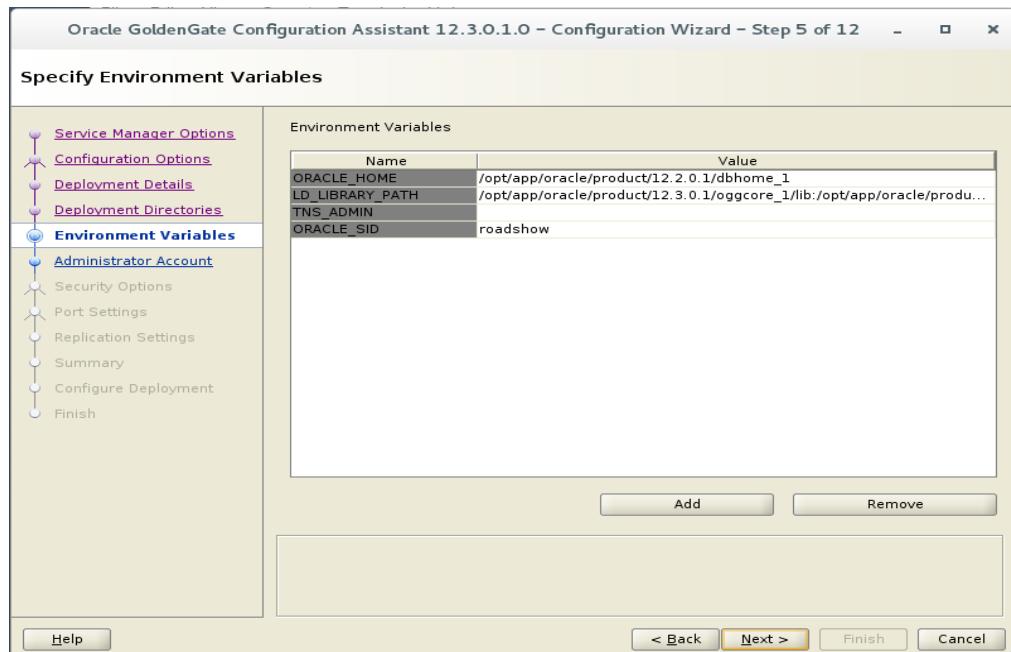
- This step, you need to provide the deployment home directory you wish to use. Since this is on the same machine, select the same deployment directory where you added the first deployment and ensure you have a folder for this new deployment (Figure 3-4).

Figure 3-4: Step 4 of OGGCA.sh



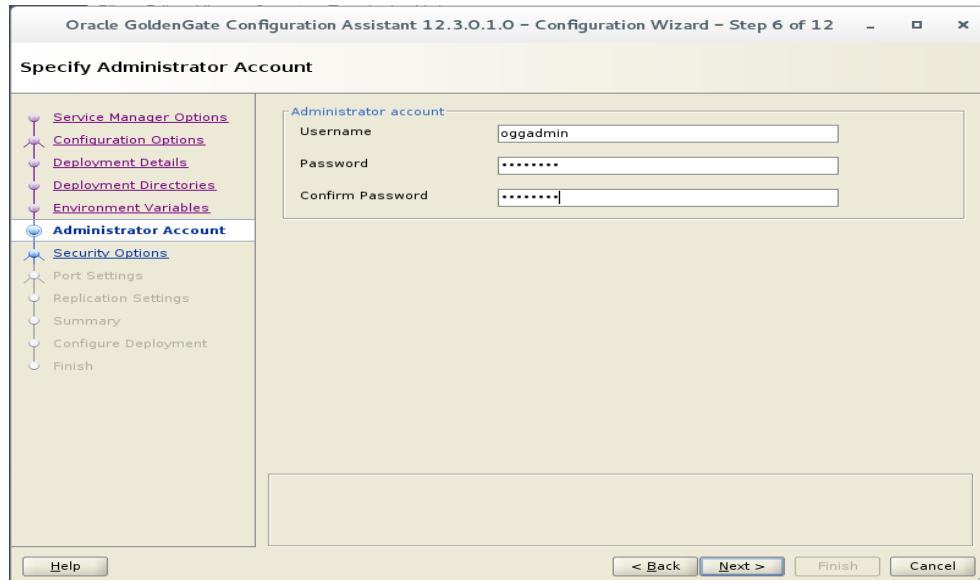
- Next, you will need to ensure that the environment variables are correct for your environment. Figure 3-5 shows you what it should look like.

Figure 3-5: Step 5 of OGGCA.sh



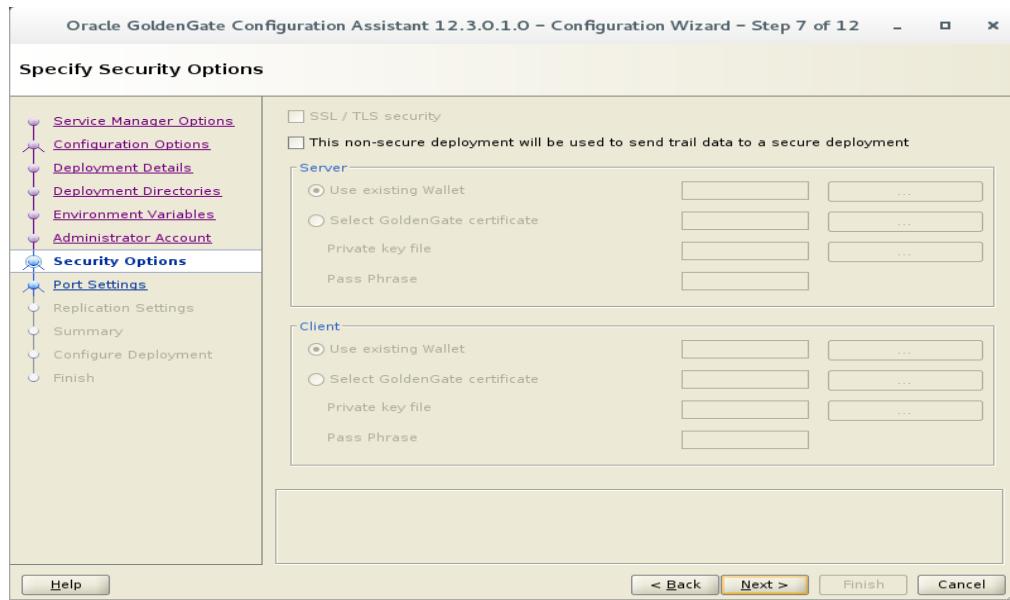
- Provide the Administrator account information you used in the first deployment.

Figure 3-6: Step 6 of OGGCA.sh



- Security options will be the next step in the deployment creation. Since the first deployment was configured without certificates, this deployment can be configured the same way. However, notice that you can configure the second deployment to use a secure connection with a non-secure deployment, if needed.

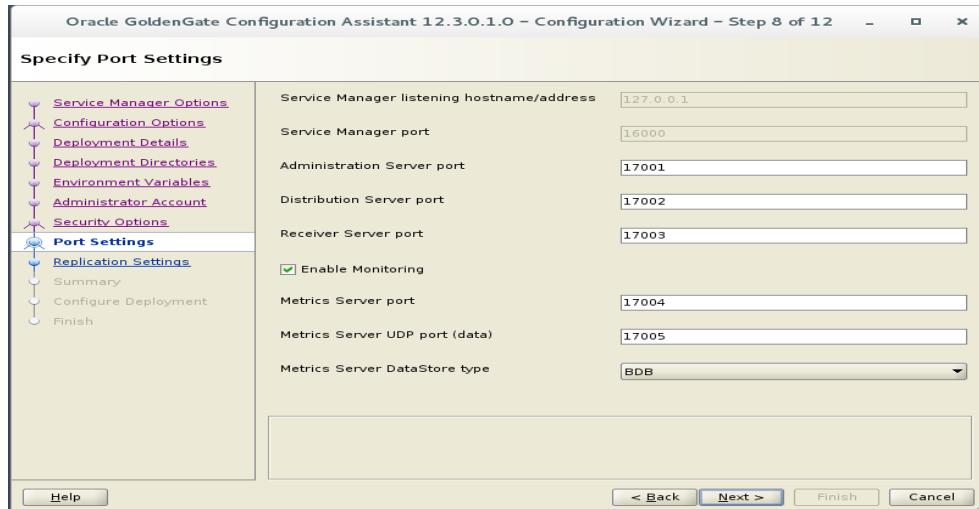
Figure 3-7: Step 7 of OGGCA.sh



10. Next you will configure the ports needed for the second deployment. These ports must be different from the first deployment. Use a different range of ports as needed.

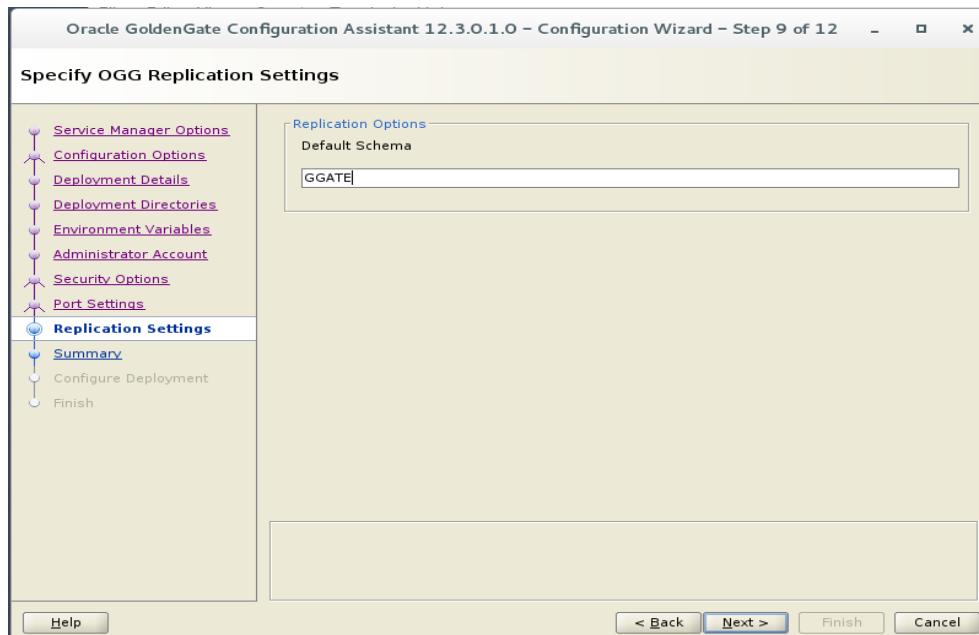
Note: If you enable monitoring for this deployment, you must have a license of Oracle GoldenGate Management Pack.

Figure 3-8: Step 8 of OGGCA.sh



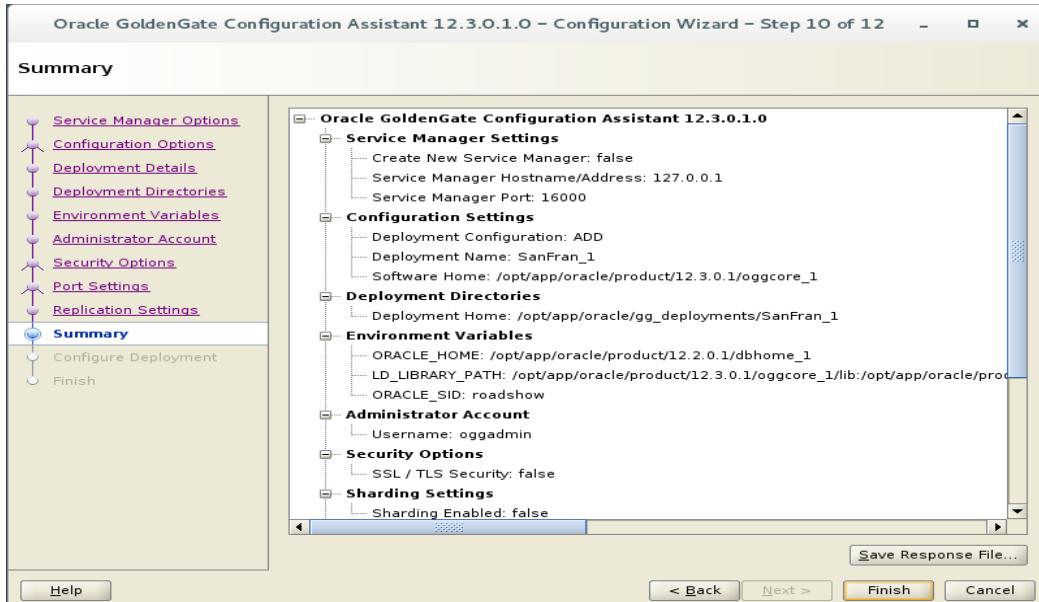
11. Next you will provide the default replication schema. Traditionally this is the schema that will contain the Oracle GoldenGate schema objects. Provide the schema name that will be stored in the GLOBALS file.

Figure 3-9: Step 9 of OGGCA.sh



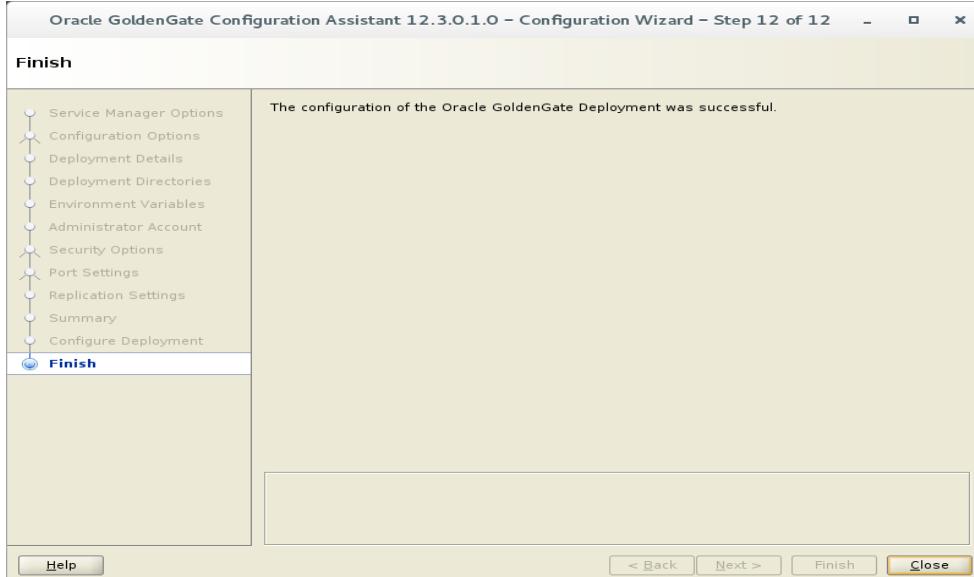
12. You will finally be at the summary screen on this step. Make sure everything is as you expect for the deployment before clicking Finish.

Figure 3-10: Step 10 of OGGCA.sh



13. After clicking Finish, the wizard will create the deployment. There is no picture shown because deployments are normally created pretty quickly.
14. After the deployment is created, you will be taken to the Finish screen. At this point, you can close the OGGCA wizard.

Figure 3-11: Step 12 of OGGCA.sh



Lab 4: Access Service Manager to Verify Deployments

Objective:

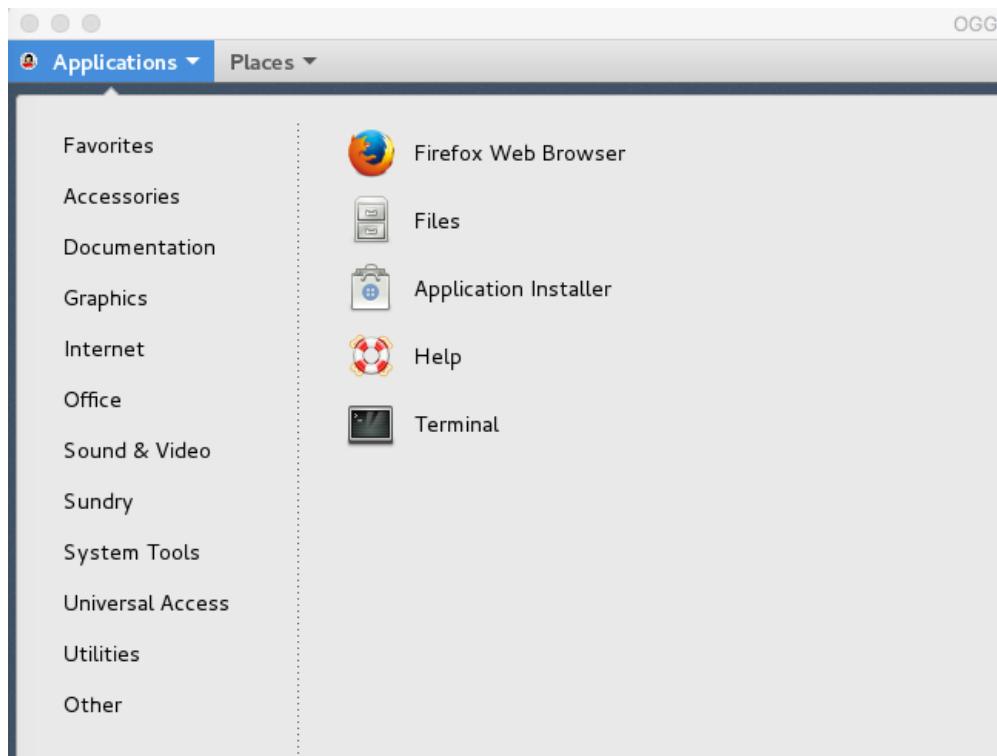
In this lab, you will access the running Service Manager and verify that the two deployments you created are running.

Time: 5 minutes

Steps:

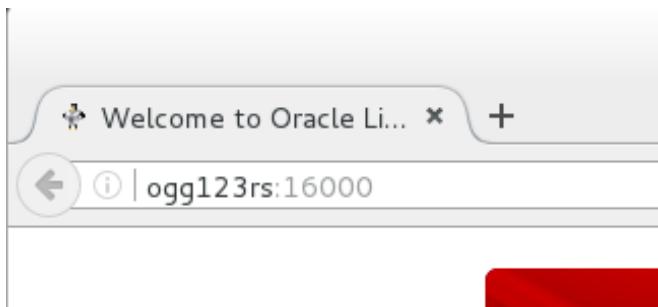
1. The first step you will need to do is start a web browser. This can be done within the VM by navigating to Applications -> Favorites -> Firefox Web Browser (Figure 4-1).

Figure 4-1: Access Web Browser



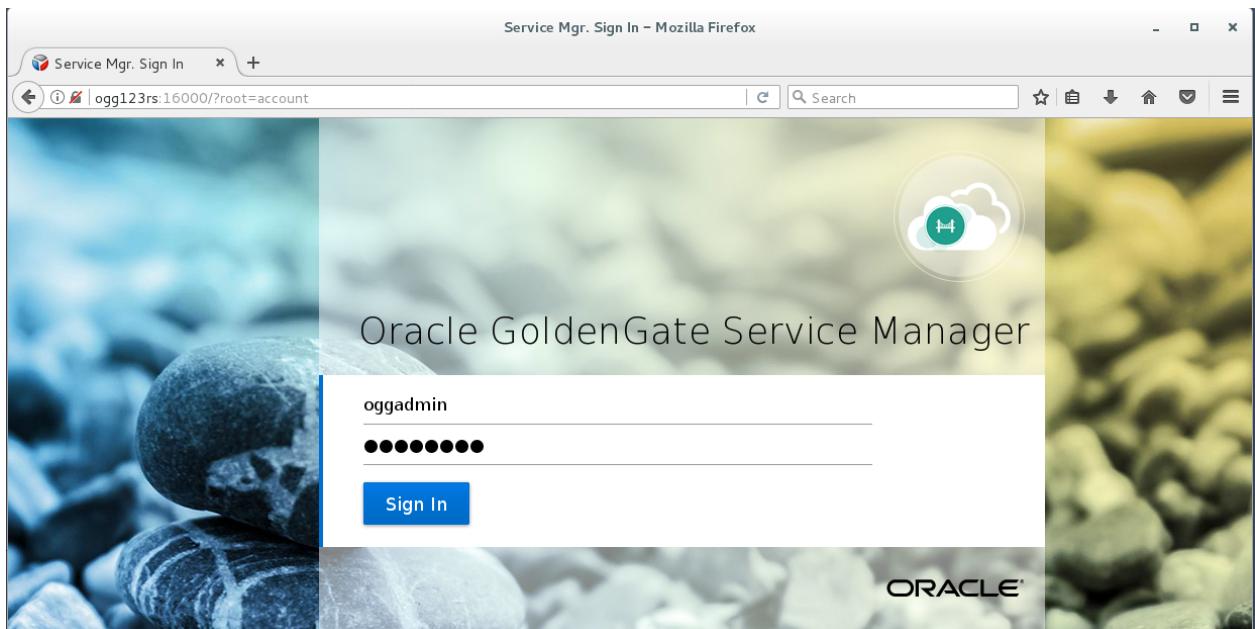
- Once Firefox has started, you need to provide the URL for the Service Manager. The URL consists of the hostname and the port number you provided for the Service Manager to run on (Figure 4-2).

Figure 4-2: URL Address Example



- After providing the address for the Service Manager and hitting enter, you will be taken to a webpage where you can login to the Service Manager. The login will be the Administrator account that you setup during the configuration of the Service Manager and first deployment (Figure 4-3).

Figure 4-3: Service Manager Login Page



- After signing in, you will be presented with a lot of information on the deployments associated with Service Manager. Deployments are listed at the bottom of the page. Components of each deployment is listed at the top. Take a few minutes to look around. We will begin configuring a replication environment shortly.

Figure 4-4: Service Manager Main Page

The screenshot shows the Service Mgr. Overview page in Mozilla Firefox. The title bar reads "Service Mgr. Overview - Mozilla Firefox". The address bar shows the URL "ogg123rs:16000". The page header includes the ORACLE logo and the text "Oracle GoldenGate Service Manager 12.3.0.1.0".

The main content area displays a summary of services: 7 Running, 0 Failed, and 1 Other. Below this is a dropdown menu for "Deployment" set to "All". A table lists the following data:

Deployment	Service	Port	Status	Action	Details
Atlanta_1	Administration Server	16001	Running	Stop	
SanFran_1	Administration Server	17001	Running	Stop	
Atlanta_1	Distribution Server	16002	Running	Stop	
SanFran_1	Distribution Server	17002	Stopped	Start	
Atlanta_1	Performance Metrics Server	16004	Running	Stop	
SanFran_1	Performance Metrics Server	17004	Running	Stop	
Atlanta_1	Receiver Server	16003	Running	Stop	

At the bottom left, there is a button labeled "▲ Notifications".

Lab 5: Configure CDB/PDB for Replication

Objective:

In this lab, you will spend time configuring a user that will be used at the database level for replication. This is normally the Oracle GoldenGate user (*GGATE*); since we are using CDBs and PDBs in these labs the user will have to be a common user.

Time: 10 mins

Steps:

1. Navigate to the Scripts directory

```
$ cd ~/Desktop/Scripts
```

2. Start SQL*Plus

```
$ sqlplus / as sysdba
```

You should be connected to the CDB.

3. Execute the following script.

```
SQL> @create_ggate_user.sql
```

The `create_ggate_user.sql` script will create the common user `C##GGATE`. This user will be used to read the undo and redo logs for all databases associated with the Container Database (CDB) and will have access to the Pluggable Databases (PDB) below. If you have time, go and review the SQL script file in `~/Desktop/Scripts`.

Once the script has completed running, access each pluggable database and grant the GoldenGate user access to the pluggable databases.

1. Grant the privileges needed for capture and apply for all pluggable databases. This is done from the CDB (CDB\$ROOT).

```
SQL> exec DBMS_GOLDENGATE_AUTH.GRANT_ADMIN_PRIVILEGE
('C##GGATE', container=>'ALL');
```

2. Change container to pluggable database.

```
SQL> alter session set container = PDB1;
```

3. Grant connect to the common users.

```
SQL> grant connect to c##ggate;
```

4. Grant DBA role to common user.

```
SQL> grant dba to c##ggate;
```

5. Repeat steps 2-4 for pluggable database PDB2, then exit SQL*Plus

Lab 6: Configure Swingbench Schemas

Objective:

In this lab, you will configure the schemas and initial data loads for each pluggable database, using Swingbench.

Time: 45 mins

Steps:

1. The `tnsnames.ora` file needs to be updated to include entries for PDB1 and PDB2. This has already been done for you for this lab, but you can view the file to verify.

```
$ cat $ORACLE_HOME/network/admin/tnsnames.ora
```

2. Navigate to the Swingbench `bin` directory

```
$ cd /opt/app/oracle/product/swingbench/bin
```

3. Execute the Order Entry Wizard (`oewizard`)

```
$ ./oewizard
```

At this point a GUI installer will start.

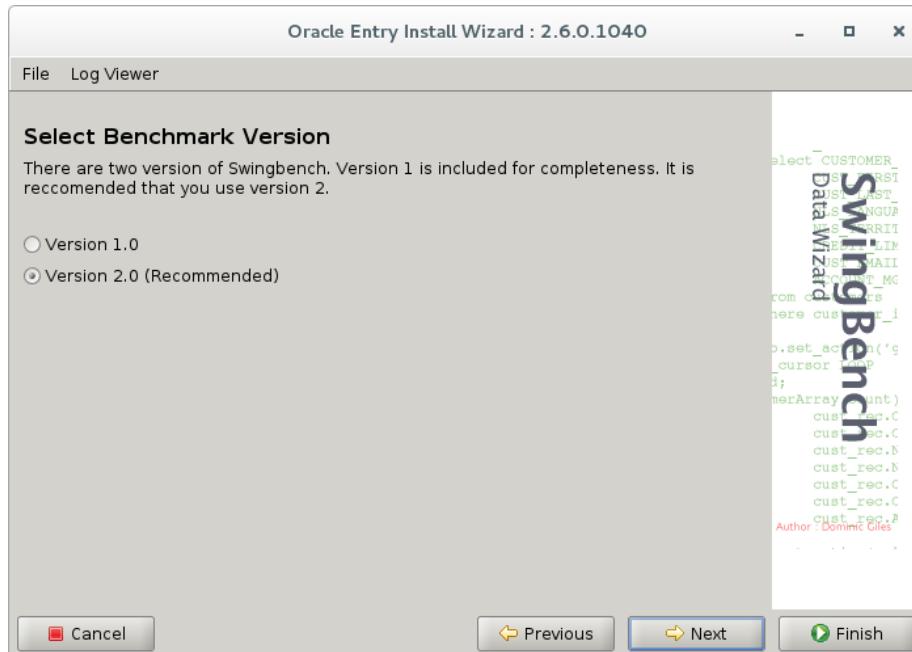
- Once the installer starts, click Next (Figure 6-1)

Figure 6-1



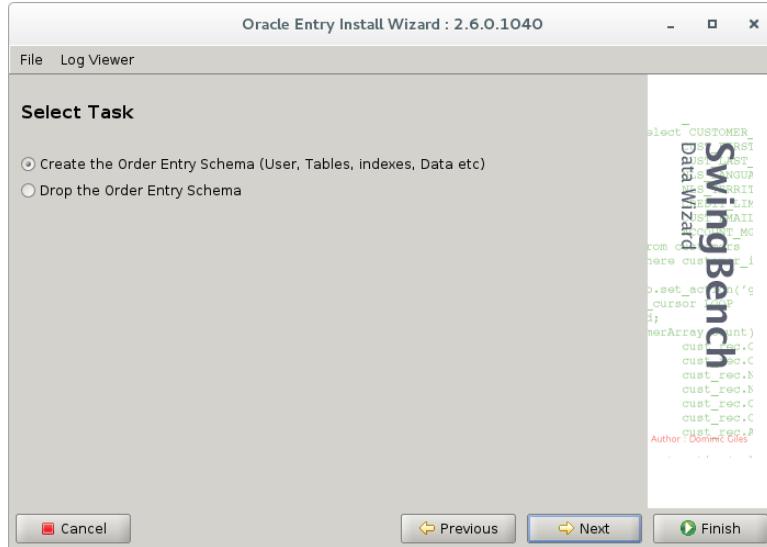
- Make sure you select "Version 2.0" (Figure 6-2). This is the recommended version. Then click Next.

Figure 6-2:



6. Next select the radio button to “Create the Order Entry Schema”. Then click Next (Figure 6-3)

Figure 6-3:



7. Update the connection string and Administrator password. Then click Next (Figure 6-4).

Connection String = //ogg123rs/pdb1

Administrator Password = welcome1

Note: Step 14 will tell you to come back here and perform the same actions for pdb2.

Figure 6-4:



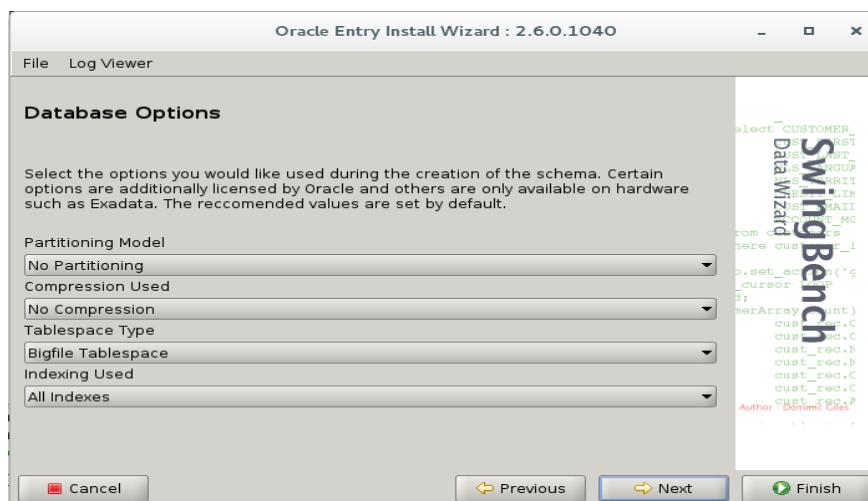
8. Provide the schema details for PDB1. The Oracle Database is using Oracle Managed Files (OMF), so no need to provide a directory to the Tablespace's Datafile (Figure 6-5). The username and schema tablespace should be "soe". Change the password to welcome1.

Figure 6-5:



9. Provide the database options that you want the schema to use. Accept the defaults and click Next (Figure 6-6).

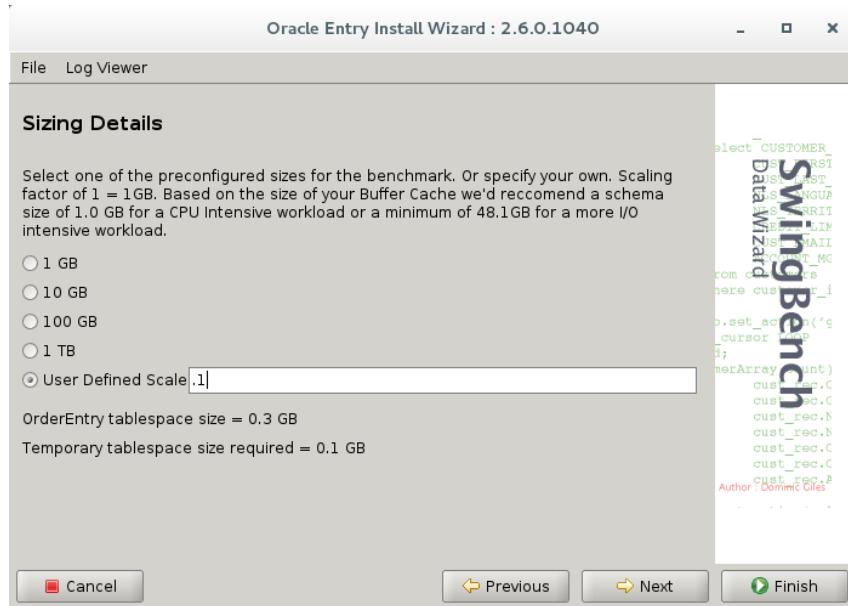
Figure 6-6:



10. For Sizing Details, you only need a small set of data to work with, so select the User Defined Scale option and supply a value of (.1) (Figure 6-7). Click Next.

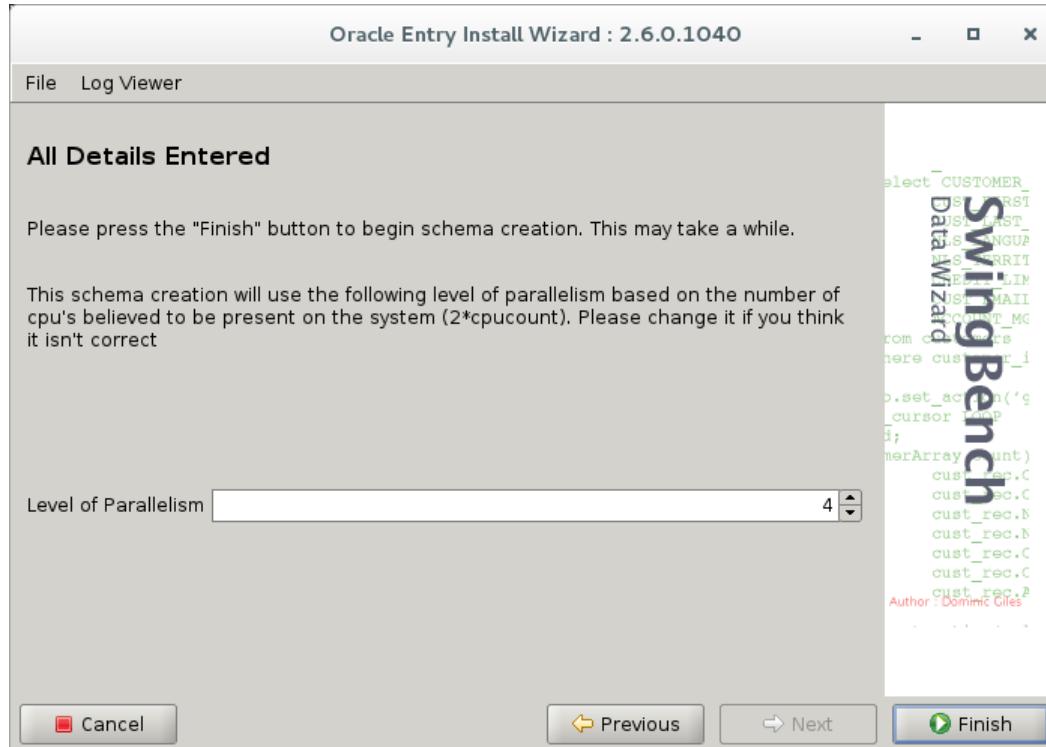
Note: Using a User Defined Scale larger than (.1) takes considerable more time to generate the data.

Figure 6-7:



11. Lastly, select the parallelism you want to use. The default is 4, which should be fine for most workstations (Figure 6-8). Click Finish when ready.

Figure 6-8:

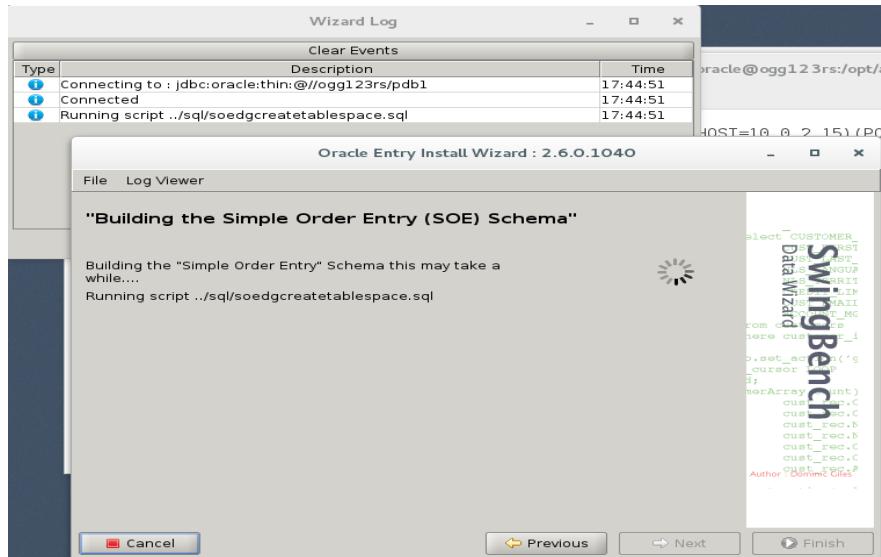


You may get a warning message about temporary space within the database. You will want to continue. Click Yes.

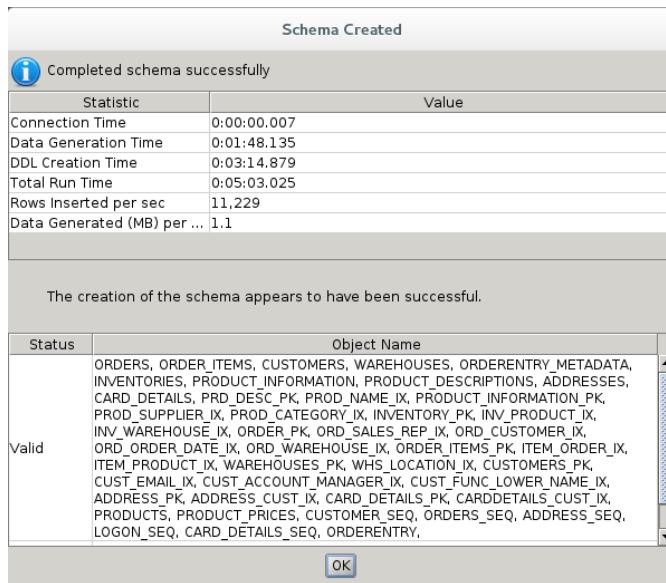


12. The SOE schema will be built once you click Finish (Figure 6-9)

Figure 6-9:



13. When the process completes, you will see a pop-up box that says Schema Created. Click OK.



14. Close Swinchenbench altogether, then repeat steps 1-13 to load the target database, changing the name of the connection string for Step 7 to //ogg123rs/pdb2.

Lab 7a: Configure Uni-Directional Replication (Integrated Extract)

Objective:

This lab is in two parts. The first part will setup the Integrated Extract for Oracle GoldenGate 12c Service Architecture for a uni-directional configuration using the SOE schema in PDB1 and PDB2.

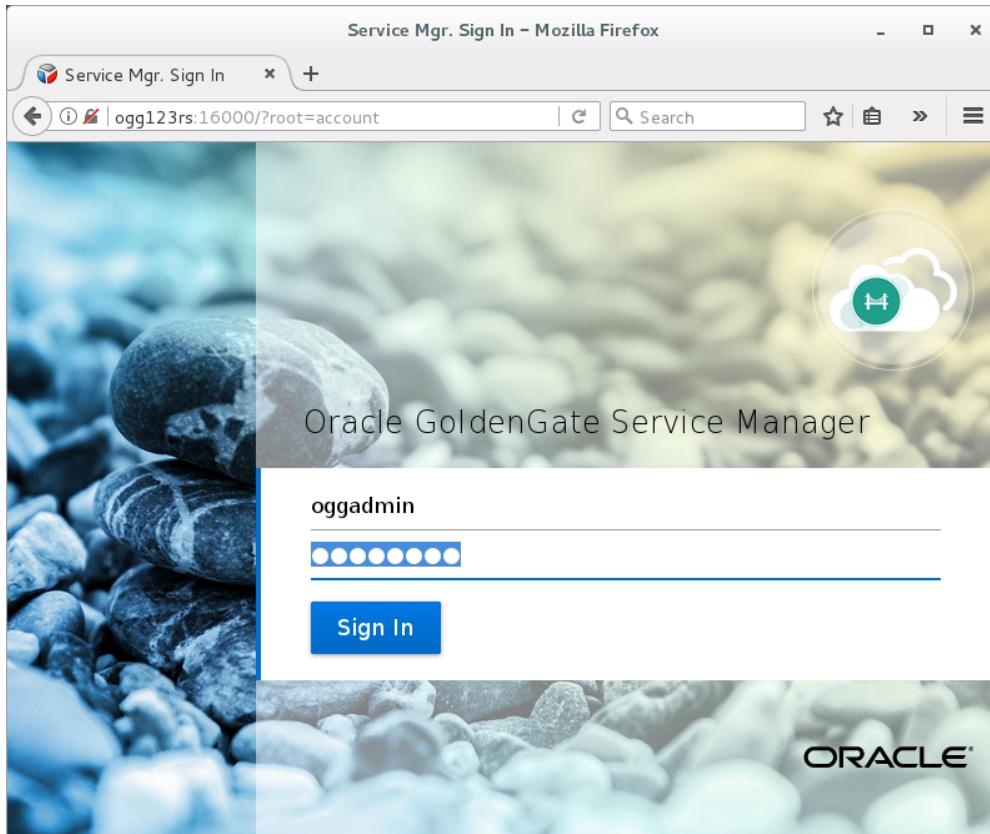
Time: 25 minutes

Steps:

1. Open Firefox and login to the Service Manager using the Administrator account you setup during deployment (Figure 7a-1). Port number will vary depending on what you used during setup.

<http://ogg123rs:16000>

Figure 7a-1:



2. After logging in, find and open the Administration Server for your first deployment. In this example, the first deployment is Atlanta_1 (Figure 7a-2). When the page is completely open, you should be at a page where you can see Extracts/Replicats clearly.

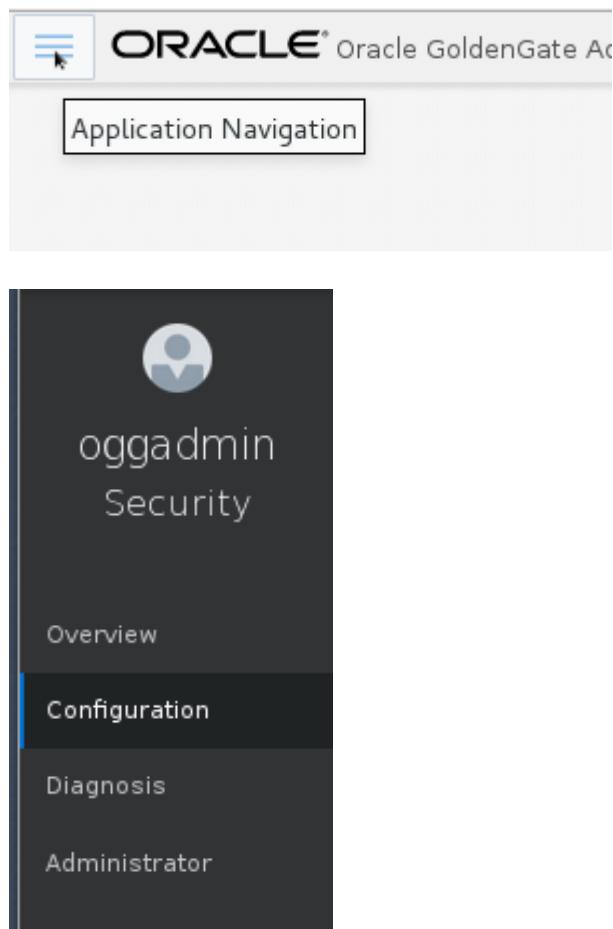
Note: You will be required to login again. Use the same Administrator account that was used with the Service Manager.

Figure 7a-2:

The screenshot shows the 'Admin Server Overview' page in Mozilla Firefox. The URL is ogg123rs:16001. The page title is 'Admin Server Overview - Mozilla Firefox'. The main content area displays two tabs: 'Extracts' and 'Replicats'. Under 'Extracts', there are three categories: Running (0), Failed (0), and Other (0). Under 'Replicats', there are three categories: Running (0), Failed (0), and Other (0). Below these tabs is a section titled 'Critical Events' with a table. The table has columns: Date, Severity, Code, and Message. A message at the top of the table says 'Loading Critical Event...'. At the bottom of the table, it shows 'Page 1 (0 of 0 items)' and navigation buttons. On the left side, there is a sidebar with 'oggadmin' and 'Security' buttons, and a vertical menu with 'Overview', 'Configuration', 'Diagnosis', and 'Administrator' options. The status bar at the bottom shows 'ogg123rs:16001/#'.

3. Before you can create an Extract, you need to setup a credential alias for the GoldenGate user (C##GGATE). This is done from the Configuration menu option in the grey bar on the left of the screen (Figure 7a-3).

Figure 7a-3:



- On the Configuration page, select the plus (+) sign to begin adding a credential. At this point, you will be able to add a Credential Alias (Figure 7a-4). You will need to add the alias for a user that will connect to CDB and PDB1. The CDB alias will be used to connect to the database to read the required files for extraction operations, and the PDB1 user will be used to add TRANDATA to the schemas used in replication.

Figure 7a-4:

The screenshot shows the Oracle GoldenGate Administration Server interface. The left sidebar has sections for Overview, Configuration (which is selected), Diagnosis, and Administrator. The main area has tabs for Database, Maintenance, and Parameter Files, with Database selected. Under Database, there's a 'Credentials' section with a '+' sign to add new entries. A search bar says 'Search in table'. Below it is a table with columns 'Domain', 'Alias', and 'User ID'. A message says 'No data to display.' Below the table is a note: 'To manage Checkpoint, Trandata and Heartbeat, please click to log in to database'. The 'Configuration' tab is active. In the center, there's a form to add a new credential:

Credential Domain:	SGGATE
* Credential Alias:	SGGATE
* User ID:	C##GGATE@PDB1
* Password:	*****
* Verify Password:	*****

At the bottom are 'Cancel' and 'Submit' buttons.

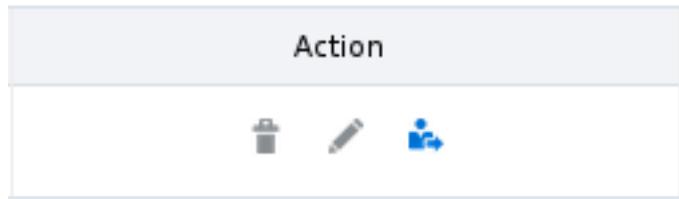
You will notice that a Domain name and Credential Alias were added along with the User ID and Password. After adding the user to the credential store, you will reference it via its domain name and credential alias.

You will need to create two (2) credential aliases for your **Atlanta_1** deployment. The first credential will be for the CDB database and the second will be for the PDB1 database. The table below shows what needs to be added:

Credential Domain	Credential Alias	User ID	Password
SGGATE	SGGATE	C##GGATE@PDB1	ggate
CDBGATE	CDBGATE	C##GGATE@CDB	ggate

5. Verify that the credentials you just created work. There is a little man icon under Action in the table. Click on this for each Credential Alias and you should be able to login to the database (Figure 7a-5).

Figure 7a-5:



6. Add SCHEMATRANDATA to the SOE schema using the SGGATE Credential Alias.

After logging into the database as described in step 5 for PDB1, find the Trandata section. Click on the plus (+) sign and make sure that the radio button for Schema is selected (Figure 7a-6). At this point, you provide the Schema Name, enable All Columns and Scheduling Columns, and click Submit.

Figure 7a-6:

The screenshot shows the "Trandata" configuration page. At the top, there is a search bar and three radio buttons: "Schema" (selected), "Table", and "Procedure". Below this, there are several configuration options:

- "Schema Name": SOE
- "Allow Nonvalidated Keys": Off
- "Scheduling Columns": On
- "All Columns": On
- "Prepare CSN Mode": nowait
- "Add Trandata in the background?": Off

A large blue "Submit" button is located at the bottom right of the form.

You will notice that after you click Submit, there is no return message that states the operation was successful. You can verify that SCHEMATRANDATA has been added by

looking searching by Schema (Figure 7a-7). To do this, click on the magnifying glass and provide the Schema name.

Figure 7a-7:

The screenshot shows the Trandata interface with the schema 'SOE' selected. A search bar contains 'SOE'. Below it, a list of tables is shown with their respective table names:

- Table Name: ADDRESSES
- Table Name: CARD DETAILS
- Table Name: CUSTÖMERS
- Table Name: INVENTORIES
- Table Name: LOGON
- Table Name:
- ORDERENTRY_METADATA
- Table Name: ÖRDERS

7. Add the Protocol user.

Since we are on the Credential screen, let's go ahead and add a Protocol user. A Protocol user is the user that the Distribution Server will use to communicate with the Receiver Server over an unsecure connection.

As you did in Step 4, click the plus sign (+) next to the word Credentials. Then provide the connection information needed (Figure 7a-8), notice that you will be using the Service Manager login in this credential.

Figure 7a-8:

The screenshot shows the 'Credentials' screen with a table listing a single credential entry:

Domain	Alias	User ID
SGGATE	SGGATE	C##GGATE@PDB1

Below the table, a message reads: **To manage Checkpoint, Trandata and Heartbeat, please click to log in to database**.

Form fields for a new credential:

- Credential Domain:
- * Credential Alias:
- * User ID:
- * Password:
- * Verify Password:

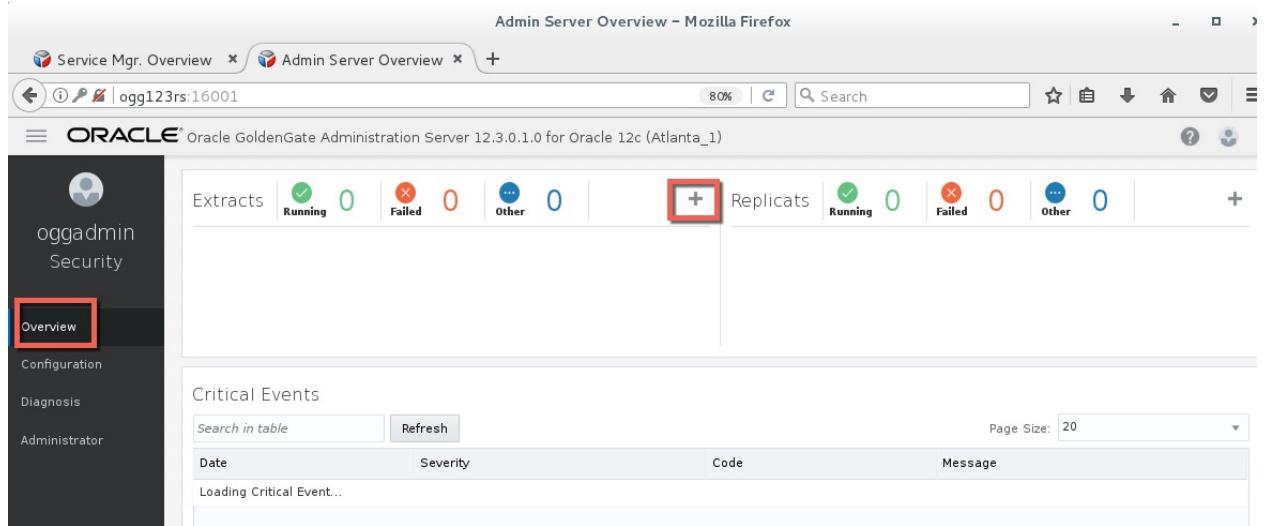
Buttons at the bottom: **Cancel** and **Submit**.

For now, just leave this login alone. It will be used in a later step.

8. Add the Integrated Extract.

Navigate back to the Overview page of the Administration Server (Figure 7a-9). Then click on the plus sign (+) in the box for Extracts.

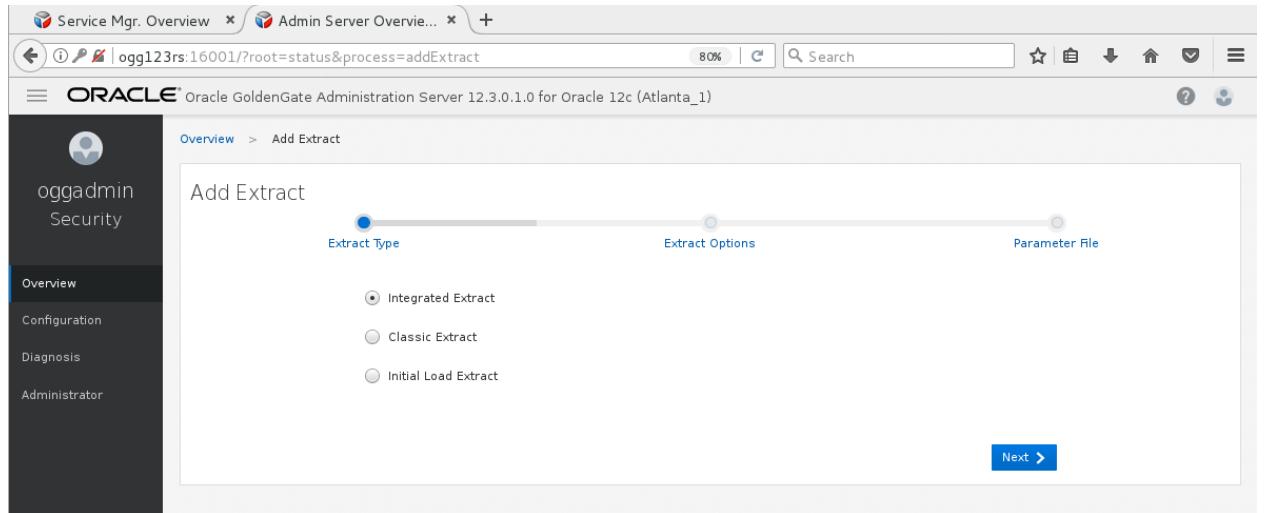
Figure 7a-9:



The screenshot shows the Oracle GoldenGate Admin Server Overview page. On the left, there's a sidebar with a user icon and the name 'oggadmin'. Below it, the 'Overview' link is highlighted with a red box. The main content area has a header 'Admin Server Overview - Mozilla Firefox'. It features several tabs: 'Service Mgr. Overview' and 'Admin Server Overview' (which is active). Below the tabs, the URL is 'ogg123rs:16001'. There are status indicators for 'Extracts' (Running 0, Failed 0, Other 0), 'Replicats' (Running 0, Failed 0, Other 0), and a search bar. A large red box highlights the '+' button in the Extracts section. Below these, there's a 'Critical Events' section with a search bar and a table header for Date, Severity, Code, and Message. A 'Page Size' dropdown is set to 20.

After clicking the plus sign (+), you are taken to the Add Extract page (Figure 7a-10). Here you can choose from three different types of Extracts. You will be installing an Integrated Extract. Click Next.

Figure 7a-10:



The screenshot shows the 'Add Extract' wizard. The title bar says 'Overview > Add Extract'. The left sidebar shows 'Overview' selected. The main content area has a progress bar with three steps: 'Extract Type' (selected), 'Extract Options', and 'Parameter File'. Under 'Extract Type', there are three radio buttons: 'Integrated Extract' (selected), 'Classic Extract', and 'Initial Load Extract'. At the bottom right is a 'Next >' button.

The next page of the Add Extract process, is to provide the basic information for the Extract. Items required have a star (*) next to them. Provide the required information and then click Next (Figure 7a-11). Keep in mind that the credentials needed to register the Extract need to be against the CDB. Use the CDB domain and alias that you setup previously.

When using the CDB credential, at the bottom of the page, you will be presented with a box where you can select the PDB that will be used. This will only appear when you have a valid credential for the CDB. Once you see this box, make sure you select PDB1.

Figure 7a-11:

Add Extract

Extract Type Extract Options

Basic Information

* Process Name: EXT1

Description:

Intent: Unidirectional

► Create new credential

* Credential Domain: CDBGATE

* Credential Alias: CDBGATE

* Begin: Now

* Trail Name: aa

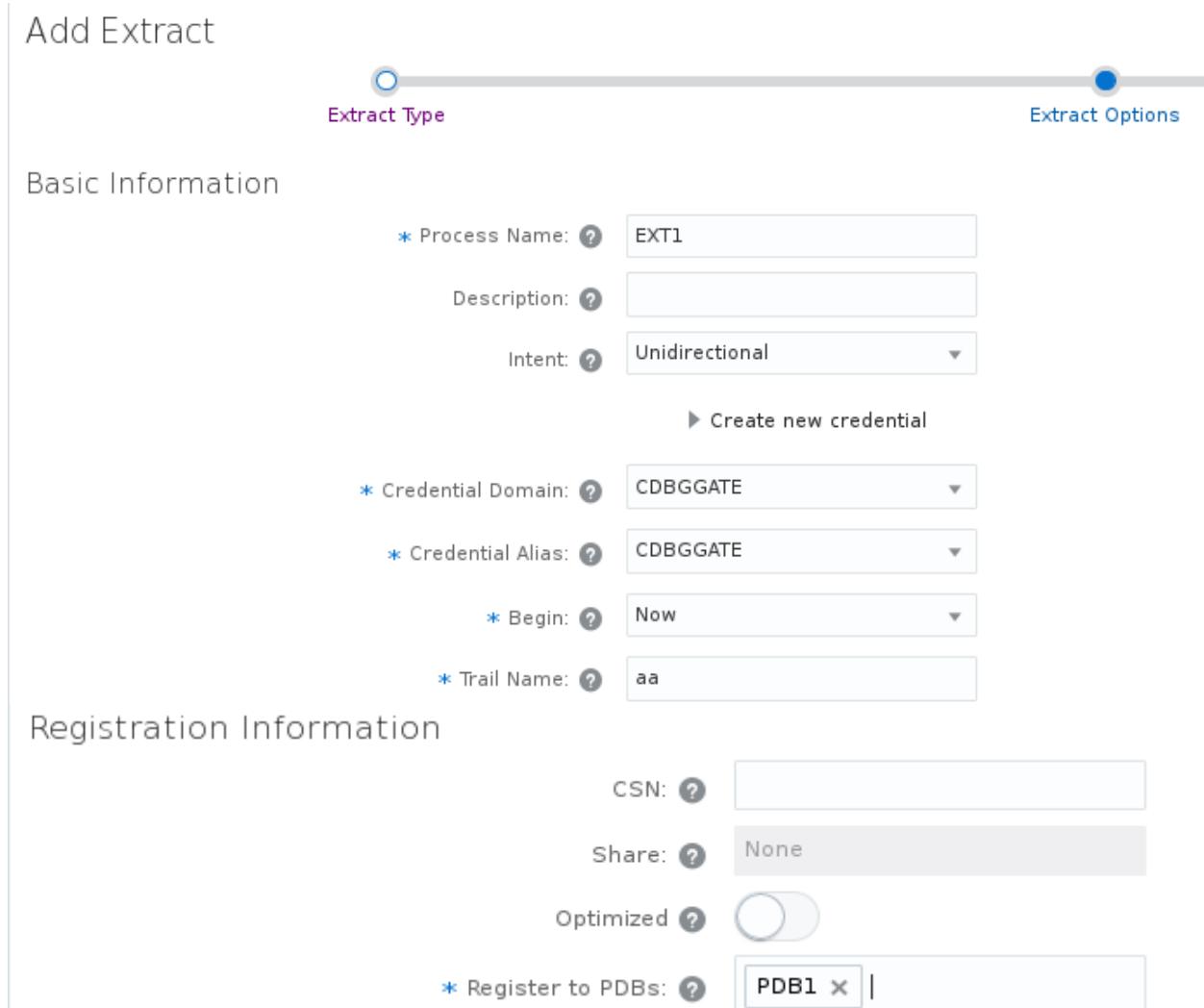
Registration Information

CSN:

Share: None

Optimized:

* Register to PDBs: PDB1



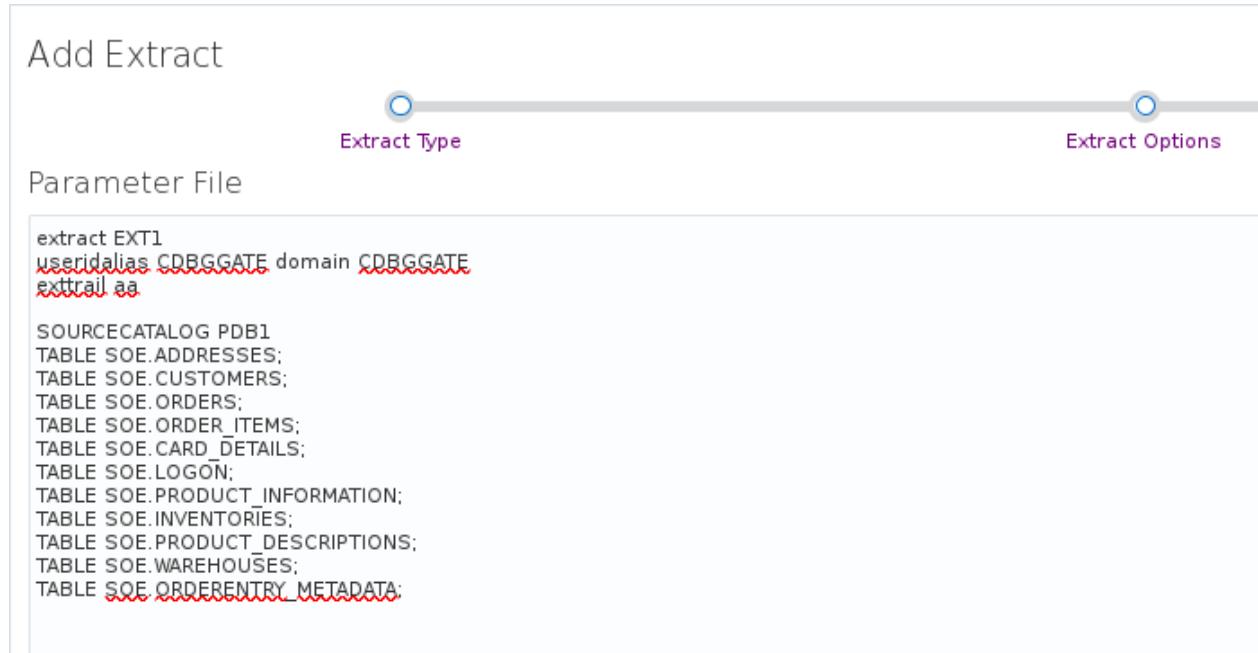
On the last page of the Add Extract process, you are presented with a parameter file (Figure 7a-12). The parameter file is partially filled out, but missing the TABLE parameters. Insert the following list of TABLE parameter values into the parameter file.

```
SOURCECATALOG PDB1
TABLE SOE.ADDRESSES;
TABLE SOE.CUSTOMERS;
TABLE SOE.ORDERS;
TABLE SOE.ORDER_ITEMS;
TABLE SOE.CARD_DETAILS;
TABLE SOE.LOGON;
TABLE SOE.PRODUCT_INFORMATION;
TABLE SOE.INVENTORIES;
TABLE SOE.PRODUCT_DESCRIPTIONS;
TABLE SOE.WAREHOUSES;
TABLE SOE.ORDERENTRY_METADATA;
```

Notes: `~/Desktop/Software/extract.prm` has these contents for copying.

Once the TABLE statements are added, click Create and Run at the bottom of the page.

Figure 7a-12:



The Administration Server page will refresh when the process is done registering the Extract with the database, and will show that the Extract is up and running (Figure 7a-13).

Figure 7a-13:

The screenshot shows the Oracle GoldenGate Admin Server Overview page. The top navigation bar includes tabs for 'Service Mgr. Overview' and 'Admin Server Overview'. The URL is 'ogg123rs:16001'. The main title is 'ORACLE Oracle GoldenGate Administration Server 12.3.0.1.0 for Oracle 12c (Atlanta_1)'. On the left, a sidebar menu is open under 'oggadmin Security', showing 'Overview' (selected), 'Configuration', 'Diagnosis', and 'Administrator'. The main content area displays two sections: 'Extracts' and 'Replicats'. The 'Extracts' section shows 1 Running, 0 Failed, and 0 Other. The 'Replicats' section shows 0 Running, 0 Failed, and 0 Other. Below these sections, a diagram shows a database icon connected to a green circle with a checkmark, labeled 'EXT1' and 'Lag'. To the right of the connection is the word 'INTEGRATED' and an 'Action' dropdown menu.

Lab 7b: Configure Uni-Directional Replication (Distribution Server)

Objective:

This lab will walk you through how to setup a Path within the Distribution Server.

Time: 10 minutes

Steps:

1. Start from the Service Manager page (Figure 7b-1).

Figure 7b-1:

Deployment:	Service	Port	Status:	Action	Details
Atlanta_1	Administration Server	16001	Running	Stop	⚙️
Atlanta_1	Distribution Server	16002	Running	Stop	⚙️
Atlanta_1	Performance Metrics Server	16004	Running	Stop	⚙️
Atlanta_1	Receiver Server	16003	Running	Stop	⚙️

Deployment:	GoldenGate Home:	Status:	Running Services	Not Running Services	Action
Atlanta_1	/opt/app/oracle/product/12.3.0.1/oggcore_1	Running	4	0	Action
SanFran_1	/opt/app/oracle/product/12.3.0.1/oggcore_1	Running	4	0	Action
ServiceManager	/opt/app/oracle/product/12.3.0.1/oggcore_1	Running	0	0	Action

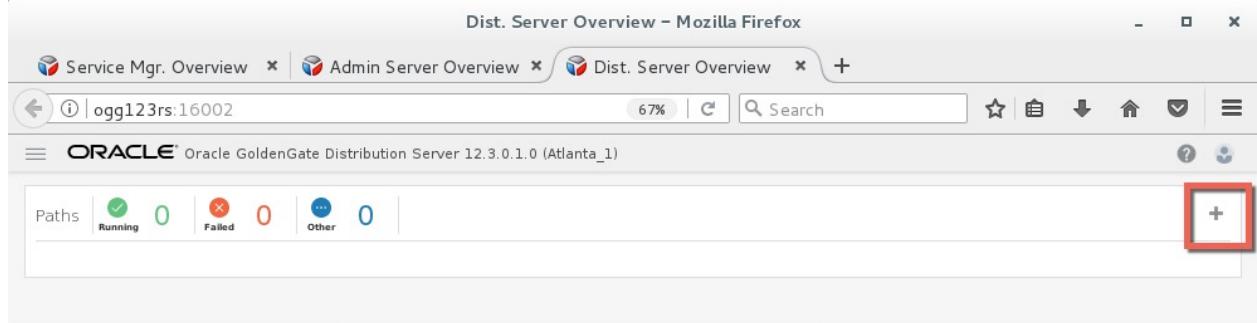
2. Open the Distribution Server page for your first deployment (Figure 7b-2).

Figure 7b-2:

Paths	Running	0	Failed	0	Other	0

- Click the plus sign (+) to add a new Distribution Path (Figure 7b-3).

Figure 7b-3:



- On the Add Path page, fill in the required information (Figure 7b-4). Make note that the default protocol for distribution service is secure websockets (wss). You will need to change this to websockets (ws).

Figure 7b-4:

* Path Name:	SOE2SOE
Description:	(empty)
* Source:	EXT1 aa
	ws ogg123rs 17003 bb
Configure Trail Format: <input type="checkbox"/>	
* Domain:	WSTARGET
* Alias:	WSTARGET
Begin:	Position in Log
Source Sequence Number:	0
Source RBA Offset:	0

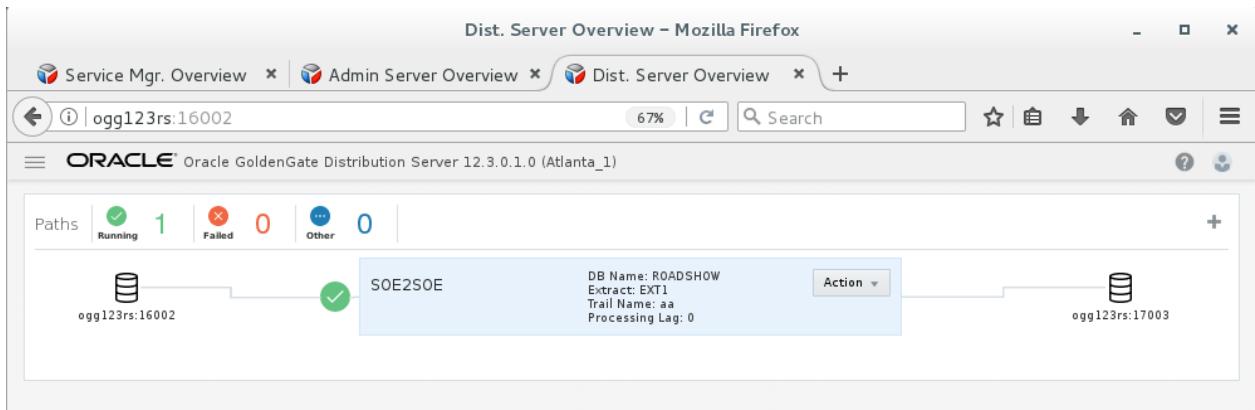
Notice the drop down with the values WS, WSS, UDT and OGG. These are the protocols you can select to use for transport. Since you are setting up an unsecure uni-directional replication, make sure you select WS, then provide the following target information:

Hostname: ogg123rs
Port: <2nd deployment's receiver server port>
Trail File: <any two letter value>
Domain: <credential you created in the Admin Server for WS>
Alias: <credential you created in the Admin Server for WS>

After filling out the form, click Create and Run at the bottom of the page.

5. If everything works as expected, your Distribution Path should be up and running. You should be able to see clearly the source and target on this page (Figure 7b-5).

Figure 7b-5:



Lab 7c: Configure Uni-Directional Replication (Receiver Server)

Objective:

In this lab, you will configure the Receiver Server for the target database, which will receive the trail from the Distribution Path that you created on the source deployment.

Time: 5 minutes

Steps:

1. Start from the Service Manager page for your second deployment (Figure 7c-1).

Figure 7c-1:

Deployment:	Service	Port	Status:	Action	Details
SanFran_1	Administration Server	17001	Running	Stop	
SanFran_1	Distribution Server	17002	Running	Stop	
SanFran_1	Performance Metrics Server	17004	Running	Stop	
SanFran_1	Receiver Server	17003	Running	Stop	

2. Click on the Receiver Server link to open the Receiver Server page (Figure 7c-2). Verify that everything is configured.

Figure 7c-2:

The screenshot shows the Oracle GoldenGate Receiver Server 12.3.0.1.0 interface. The main window title is "Recv. Server Overview - Mozilla Firefox". The top navigation bar includes tabs for "Service Mgr. Overview", "Recv. Server Overview" (which is currently selected), "Admin Server Overview", and "Dist. Server Overview". The main content area is titled "ORACLE Oracle GoldenGate Receiver Server 12.3.0.1.0 (SanFran_1)". A summary table at the top shows one "Running" path ("ogg123rs") and zero failed paths. Below this, a diagram illustrates a single path configuration: a cylinder icon labeled "ogg123rs" is connected by a line to a central box labeled "SOE2SOE" with "DB: Extract: Port:17003". This box is connected by another line to a cylinder icon labeled "bb". An "Action" button is located next to the central box.

Lab 7d: Configure Uni-Directional Replication (Integrated Replicat)

Object:

In this lab you will configure the Integrated Replicat for the second deployment.

Time: 25 minutes

Steps:

1. Starting from the Service Manager page (Figure 7d-1).

Figure 7d-1:

Deployment:	Service	Port	Status:	Action	Details
SanFran_1	Administration Server	17001	Running	Stop	⚙️
SanFran_1	Distribution Server	17002	Running	Stop	⚙️
SanFran_1	Performance Metrics Server	17004	Running	Stop	⚙️
SanFran_1	Receiver Server	17003	Running	Stop	⚙️

2. Open the Administration Server for the second deployment by clicking on the link (Figure 7d-2).

Figure 7d-2:

The screenshot shows the 'Admin Server Overview' page of the Oracle GoldenGate Administration Server. The browser title bar reads 'Admin Server Overview - Mozilla Firefox'. The address bar shows the URL 'ogg123rs:17001'. The main content area displays the following information:

- Extracts:** Running 0, Failed 0, Other 0. Buttons for '+', 'Replicats', and another '+'. A tooltip 'oggadmin' is visible above the first '+' button.
- Replicats:** Running 0, Failed 0, Other 0. Buttons for '+', 'Extracts', and another '+'. A tooltip 'oggadmin' is visible above the first '+' button.
- Critical Events:** A table with columns Date, Severity, Code, and Message. A search bar 'Search in table' and a refresh button 'Refresh' are at the top. A dropdown 'Page Size: 20' is on the right. A message 'Loading Critical Event...' is displayed below the table.
- Navigation:** Page number 1 (0 of 0 items) and navigation icons <, >, and <>.

The left sidebar shows the user 'oggadmin' and navigation links: Overview, Configuration, Diagnosis, and Administrator.

3. Open the Configuration option to add your credentials needed to connect to PDB2 (Figure 7d-3). After creating the credential, login and verify that it works.

You will need to create 1 credential for the user to connect to PDB2. We will use the same common user as before, C##GGATE@PDB2, with password ggate. Click Submit when finished.

Figure 7d-3:

The screenshot shows the Oracle GoldenGate Admin Server Configuration interface in Mozilla Firefox. The URL is `ogg123rs:17001/?root=configuration`. The left sidebar has tabs for Overview, Configuration (which is selected), Diagnosis, and Administrator. The main content area has tabs for Database, Maintenance, and Parameter Files. Under Database, the 'Credentials' section is active. It shows a table with columns: Domain, Alias, and User ID. A message at the top says, "To manage Checkpoint, Trandata and Heartbeat, please click 

4. Navigate back to the Overview page on the Administration Server. Here you will begin to create your Integrated Replicat (Figure 7d-4). Click the plus sign (+) to open the Add Replicat process.

Figure 7d-4:

5. With the Add Replicat page open, you want to create an Integrated Replicat. Make sure the radio button is selected and click Next (Figure 7d-5).

Figure 7d-5:

6. Fill in the Replicat options form with the required information (Figure 7d-6). Your trail name should match the trail name you saw in the Receiver Server. Once you are done filling everything out, click the Next button at the bottom of the screen.

Figure 7d-6:

Admin Server Overview | Add Replicat – Mozilla Firefox

Service Mgr. Over... Admin Server Ov... Recv. Server Ov... Admin Server Ov... Dist. Server Over...

ogg123rs:17001/?root=status&process=addReplicat 67% Search

ORACLE Oracle GoldenGate Administration Server 12.3.0.1.0 for Oracle 12c (SanFran_1)

Add Replicat

Replicat Type Replicat Options Parameter File

* Process Name: REP1

Description:

Intent: Unidirectional

* Credential Domain: TGGATE2

* Credential Alias: TGGATE2

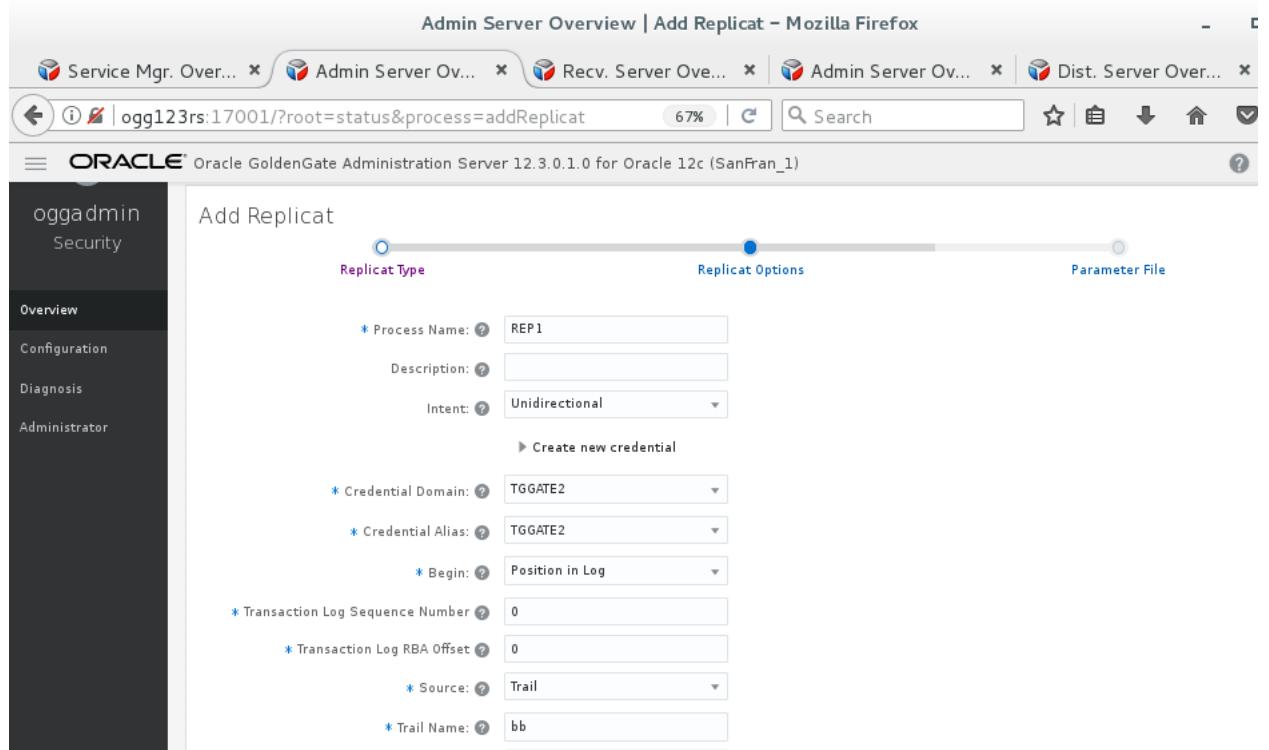
* Begin: Position in Log

* Transaction Log Sequence Number: 0

* Transaction Log RBA Offset: 0

* Source: Trail

* Trail Name: bb



7. You are next taken to the Parameter File page. On this page, you will notice that a sample parameter file is provided (Figure 7d-7). You will have to remove the MAP statement and replace it with the information below:

```

INSERTMISSINGUPDATES
MAP PDB1.SOE.CUSTOMERS, TARGET SOE.CUSTOMERS, KEYCOLUMNS (CUSTOMER_ID);
MAP PDB1.SOE.ADDRESSES, TARGET SOE.ADDRESSES, KEYCOLUMNS (ADDRESS_ID);
MAP PDB1.SOE.ORDERS, TARGET SOE.ORDERS, KEYCOLUMNS (ORDER_ID);
MAP PDB1.SOE.ORDER_ITEMS, TARGET SOE.ORDER_ITEMS, KEYCOLUMNS (ORDER_ID,
LINE_ITEM_ID);
MAP PDB1.SOE.CARD_DETAILS, TARGET SOE.CARD_DETAILS, KEYCOLUMNS (CARD_ID);
MAP PDB1.SOE.LOGON, TARGET SOE.LOGON;
MAP PDB1.SOE.PRODUCT_INFORMATION, TARGET SOE.PRODUCT_INFORMATION;
MAP PDB1.SOE.INVENTORIES, TARGET SOE.INVENTORIES, KEYCOLUMNS (PRODUCT_ID,
WAREHOUSE_ID);
MAP PDB1.SOE.PRODUCT_DESCRIPTIONS, TARGET SOE.PRODUCT_DESCRIPTIONS;
MAP PDB1.SOE.WAREHOUSES, TARGET SOE.WAREHOUSES;
MAP PDB1.SOE.ORDERENTRY_METADATA, TARGET SOE.ORDERENTRY_METADATA;

```

Notes: ~/Desktop/Software/replicat.prm has these contents for copying.

Once the parameter file has been updated, click the Create and Run button at the bottom.

Figure 7d-7:



At this point, you should have a fully functional uni-directional replication environment. You can start Swingbench and begin testing. See Appendix A for further instructions.

Lab 8: Connect and Interact with AdminClient

Objective:

In this lab, you will take a look at how to connect and interact with the AdminClient.

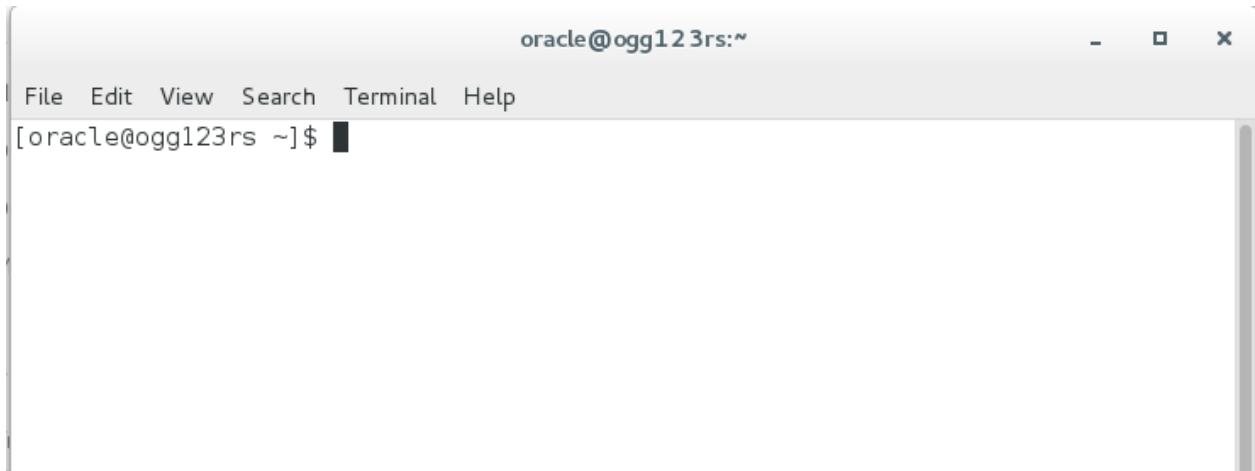
Time: 10 minutes

Steps:

1. Open a command terminal (Figure 8-1).

Right mouse click -> Open Terminal

Figure 8-1:



2. Navigate to the Oracle GoldenGate 12.3 Home /bin directory (Figure 8-2).

```
$ cd /opt/app/oracle/product/12.3.0.1/oggcore_1/bin
```

Figure 8-2:

The screenshot shows a terminal window with the title "oracle@ogg123rs:/opt/app/oracle/product/12.3.0.1/oggcore_1/bin". The window has a standard OS X style with close, minimize, and maximize buttons. The menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal prompt is "[oracle@ogg123rs ~]\$". The user runs the command "cd /opt/app/oracle/product/12.3.0.1/oggcore_1/bin" followed by "ls". The output lists several executable files: adminclient, convchk, emsclnt, logdump, pmsrvr, ServiceManager, adminsrvr, convprm, extract, oggca.sh, recvsrvr, XAGTask, cachefiledump, defgen, ggcmd, oggerr, replicat, checkprm, distsrvr, keygen, orapki, and retrac. The cursor is at the end of the "ls" command.

```
oracle@ogg123rs:/opt/app/oracle/product/12.3.0.1/oggcore_1/bin
File Edit View Search Terminal Help
[oracle@ogg123rs ~]$ cd /opt/app/oracle/product/12.3.0.1/oggcore_1/bin
[oracle@ogg123rs bin]$ ls
adminclient    convchk    emsclnt   logdump    pmsrvr    ServiceManager
adminsrvr     convprm    extract    oggca.sh   recvsrvr   XAGTask
cachefiledump defgen     ggcmd     oggerr     replicat
checkprm      distsrvr  keygen    orapki    retrac
[oracle@ogg123rs bin]$
```

3. Start the AdminClient (Figure 8-3).

```
$ ./adminclient
```

Figure 8-3:

The screenshot shows a terminal window with the title "oracle@ogg123rs:/opt/app/oracle/product/12.3.0.1/oggcore_1/bin". The terminal prompt is "[oracle@ogg123rs ~]\$". The user runs "../adminclient". The output displays the Oracle GoldenGate Administration Client version information, including the product name, version number (12.3.0.1.0), and build identifier (OGGCORE_12.3.0.1.0_PLATFOMS_170721.0154). It also shows copyright information from 1995 to 2017, the operating system (Linux, x64, 64bit), the date and time (Jul 21 2017 07:16:02), the character set (UTF-8), and a warning message about failing to open a trace output file. The prompt then changes to "OGG (not connected) 1>".

```
oracle@ogg123rs:/opt/app/oracle/product/12.3.0.1/oggcore_1/bin
File Edit View Search Terminal Help
[oracle@ogg123rs ~]$ cd /opt/app/oracle/product/12.3.0.1/oggcore_1/bin
[oracle@ogg123rs bin]$ ls
adminclient    convchk    emsclnt   logdump    pmsrvr    ServiceManager
adminsrvr     convprm    extract    oggca.sh   recvsrvr   XAGTask
cachefiledump defgen     ggcmd     oggerr     replicat
checkprm      distsrvr  keygen    orapki    retrac
[oracle@ogg123rs bin]$ ./.adminclient
Oracle GoldenGate Administration Client for Oracle
Version 12.3.0.1.0 OGGCORE_12.3.0.1.0_PLATFOMS_170721.0154

Copyright (C) 1995, 2017, Oracle and/or its affiliates. All rights reserved.

Linux, x64, 64bit (optimized) on Jul 21 2017 07:16:02
Operating system character set identified as UTF-8.

2017-08-09 09:05:10 WARNING OGG-01525 Failed to open trace output file, '/opt/app/oracle/product/12.3.0.1/oggcore_1/var/log/adminclient.log', error 2 (No such file or directory).

OGG (not connected) 1>
```

4. Connect to Oracle GoldenGate without a deployment (Figure 8-4).

```
OGG 1> connect http://ogg123rs:16000 as oggadmin password welcome1
```

Figure 8-4:



The screenshot shows a terminal window titled "oracle@ogg123rs:/opt/app/oracle/product/12.3.0.1/oggcore_1/bin". The window contains the following text:

```
File Edit View Search Terminal Help
cachefiledump defgen ggcmd oggerr replicat
checkprm distsrvr keygen orapki retrace
[oracle@ogg123rs bin]$ ./adminclient
Oracle GoldenGate Administration Client for Oracle
Version 12.3.0.1.0 OGGCORE_12.3.0.1.0_PLATFORMS_170721.0154

Copyright (C) 1995, 2017, Oracle and/or its affiliates. All rights reserved.

Linux, x64, 64bit (optimized) on Jul 21 2017 07:16:02
Operating system character set identified as UTF-8.

2017-08-09 09:05:10 WARNING OGG-01525 Failed to open trace output file, '/opt/app/oracle/product/12.3.0.1/oggcore_1/var/log/adminclient.log', error 2 (No such file or directory).

OGG (not connected) 1> connect http://ogg123rs:16000 as oggadmin password welcome1

ERROR: Deployment name must be specified
Available deployments are:
 - Atlanta_1
 - SanFran_1

OGG (not connected) 2> █
```

Notice that you are not connected and that AdminClient provides you a list of deployment you can attempt to connect to.

5. Connect to an Oracle GoldenGate deployment (Figure 8-5).

```
OGG 2> connect http://ogg123rs:16000 deployment Atlanta_1  
as oggadmin password welcome1
```

Figure 8-5:

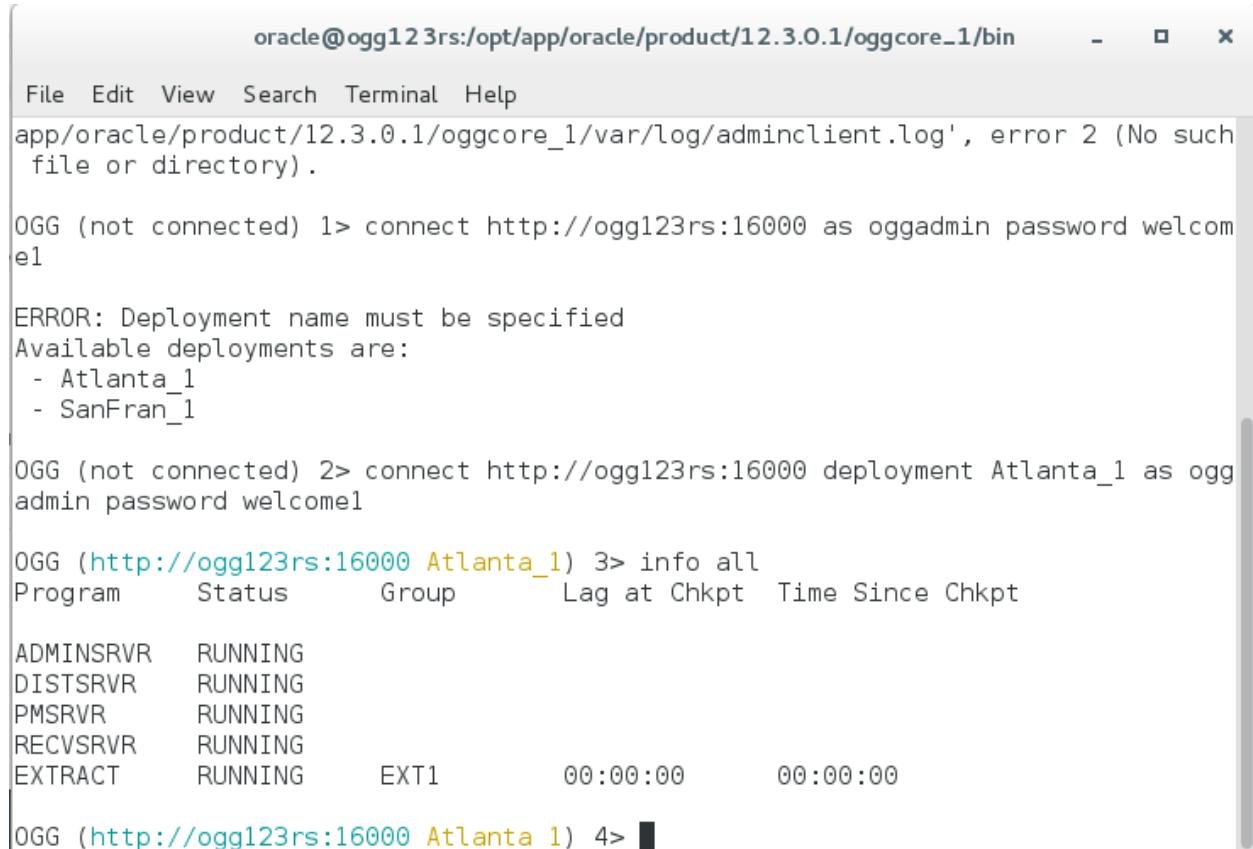


```
oracle@ogg123rs:/opt/app/oracle/product/12.3.0.1/oggcore_1/bin - □ ×  
File Edit View Search Terminal Help  
Oracle GoldenGate Administration Client for Oracle  
Version 12.3.0.1.0 OGGCORE_12.3.0.1.0_PLATFORMS_170721.0154  
Copyright (C) 1995, 2017, Oracle and/or its affiliates. All rights reserved.  
Linux, x64, 64bit (optimized) on Jul 21 2017 07:16:02  
Operating system character set identified as UTF-8.  
2017-08-09 09:05:10 WARNING OGG-01525 Failed to open trace output file, '/opt/app/oracle/product/12.3.0.1/oggcore_1/var/log/adminclient.log', error 2 (No such file or directory).  
OGG (not connected) 1> connect http://ogg123rs:16000 as oggadmin password welcome1  
ERROR: Deployment name must be specified  
Available deployments are:  
- Atlanta_1  
- SanFran_1  
OGG (not connected) 2> connect http://ogg123rs:16000 deployment Atlanta_1 as oggadmin password welcome1  
OGG (http://ogg123rs:16000 Atlanta_1) 3>
```

6. Perform an “info all” command and other GoldenGate commands to see what AdminClient can do (Figure 8-6).

```
OGG Atlanta_1 3> info all
```

Figure 8-6:



The screenshot shows a terminal window titled "oracle@ogg123rs:/opt/app/oracle/product/12.3.0.1/oggcore_1/bin". The window contains the following text:

```
oracle@ogg123rs:/opt/app/oracle/product/12.3.0.1/oggcore_1/bin - □ ×

File Edit View Search Terminal Help
app/oracle/product/12.3.0.1/oggcore_1/var/log/adminclient.log', error 2 (No such
file or directory).

OGG (not connected) 1> connect http://ogg123rs:16000 as oggadmin password welcome1

ERROR: Deployment name must be specified
Available deployments are:
- Atlanta_1
- SanFran_1

OGG (not connected) 2> connect http://ogg123rs:16000 deployment Atlanta_1 as ogg
admin password welcome1

OGG (http://ogg123rs:16000 Atlanta_1) 3> info all
Program      Status      Group      Lag at Chkpt  Time Since Chkpt
ADMINSRVR    RUNNING
DISTSRVR     RUNNING
PMSRVR       RUNNING
RECVSRVR    RUNNING
EXTRACT      RUNNING      EXT1      00:00:00      00:00:00

OGG (http://ogg123rs:16000 Atlanta_1) 4> █
```

Note: checkout the RLWRAP function as well (arrow up and down while in AdminClient)

Lab 9: Working with REST API

Object:

In this lab, you will take a look at how to pull a list of services from Oracle GoldenGate using the REST APIs. Replace <port> with the port number of the service you want to access.

Time: 10 mins

Steps:

1. Open a command window (right mouse click – Open Terminal)
2. Try running the following CURL command.

```
curl -u oggadmin:welcome1 -H "Content-Type: application/json" -H "Accept: application/json" -X GET  
http://localhost:<port>/services/v2/deployments/SanFran_1/services/distsrvr/logs |  
python -mjson.tool
```

3. Retrieve Log locations using the following CURL command

```
curl -u oggadmin:welcome1 -H "Content-Type:application/json" -H  
"Accept:application/json" -X GET http://localhost:<port>/services/v2/logs | python -  
mjson.tool
```

Appendix:

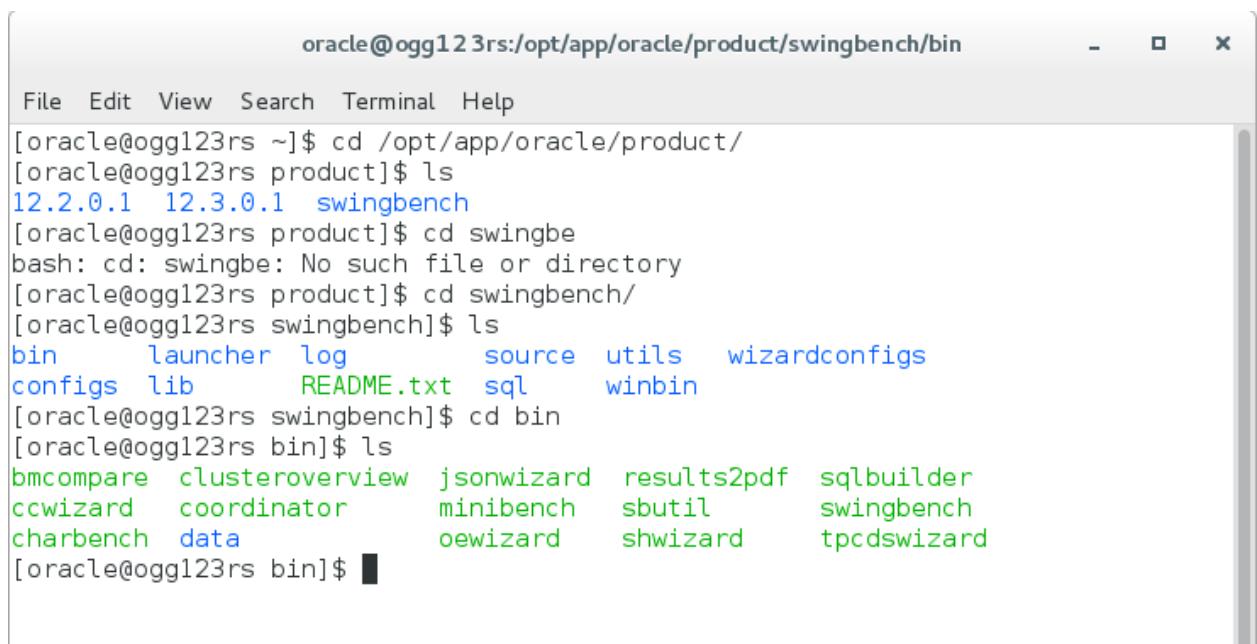
A: Run Swingbench

Steps:

1. Open a command terminal and navigate to the Swingbench bin directory (Figure A-1)

```
$ cd /opt/app/oracle/product/swingbench/bin
```

Figure A-1:



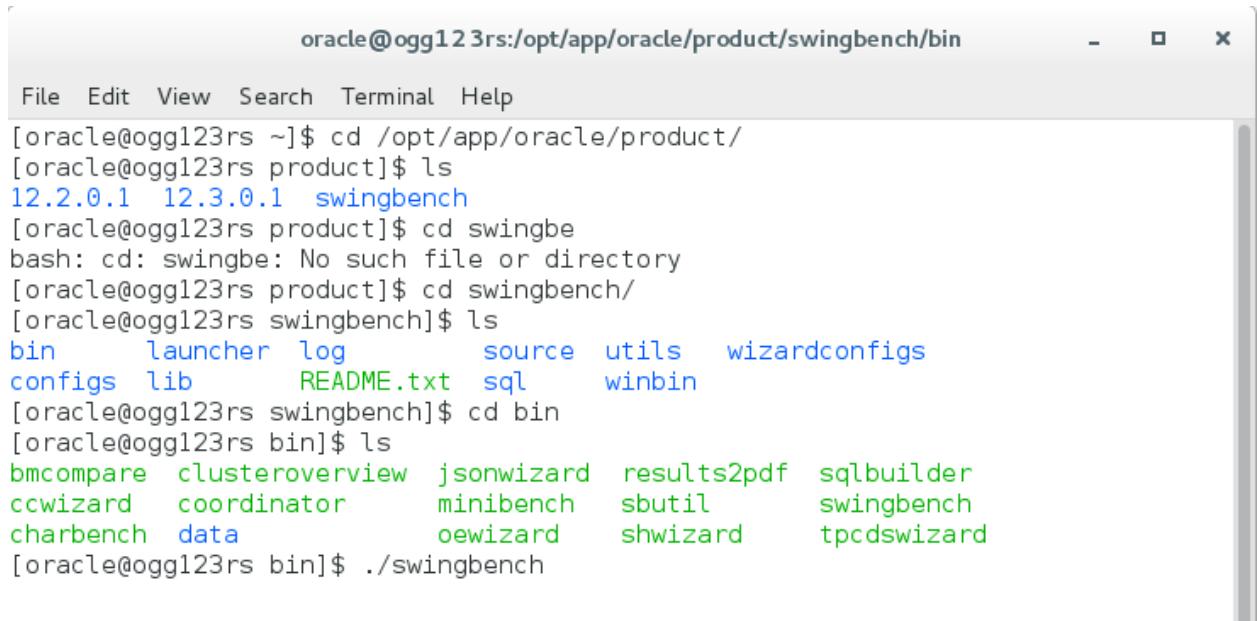
The screenshot shows a terminal window with the following command history:

```
oracle@ogg123rs:/opt/app/oracle/product/swingbench/bin
File Edit View Search Terminal Help
[oracle@ogg123rs ~]$ cd /opt/app/oracle/product/
[oracle@ogg123rs product]$ ls
12.2.0.1 12.3.0.1 swingbench
[oracle@ogg123rs product]$ cd swingbe
bash: cd: swingbe: No such file or directory
[oracle@ogg123rs product]$ cd swingbench/
[oracle@ogg123rs swingbench]$ ls
bin      launcher  log          source  utils   wizardconfigs
configs  lib       README.txt  sql     winbin
[oracle@ogg123rs swingbench]$ cd bin
[oracle@ogg123rs bin]$ ls
bmcompare  clusteroverview  jsonwizard  results2pdf  sqlbuilder
ccwizard   coordinator      minibench   sbutil    swingbench
charbench  data           oewizard    shwizard  tpcdswizard
[oracle@ogg123rs bin]$
```

2. Execute the swingbench command (Figure A-2)

```
$ ./swingbench
```

Figure A-2:

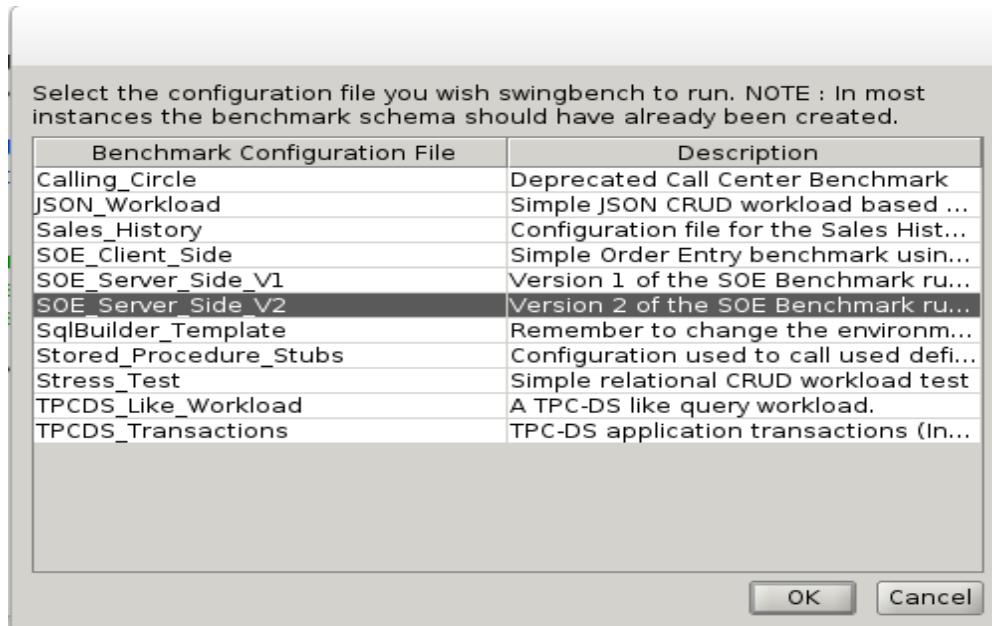


The screenshot shows a terminal window titled "oracle@ogg123rs:/opt/app/oracle/product/swingbench/bin". The window contains a command-line session where the user runs "ls" in the "/opt/app/oracle/product/swingbench/bin" directory. The output lists various files and sub-directories related to the swingbench tool, including "bin", "launcher", "log", "source", "utils", "wizardconfigs", "configs", "lib", "README.txt", "sql", "winbin", "bmcompare", "clusteroverview", "jsonwizard", "results2pdf", "sqlbuilder", "ccwizard", "coordinator", "minibench", "sutil", "swingbench", "charbench", "data", "oewizard", "shwizard", "tpcdswizard", and "swingbench". Finally, the user runs "../swingbench".

```
oracle@ogg123rs:/opt/app/oracle/product/swingbench/bin
File Edit View Search Terminal Help
[oracle@ogg123rs ~]$ cd /opt/app/oracle/product/
[oracle@ogg123rs product]$ ls
12.2.0.1 12.3.0.1 swingbench
[oracle@ogg123rs product]$ cd swingbe
bash: cd: swingbe: No such file or directory
[oracle@ogg123rs product]$ cd swingbench/
[oracle@ogg123rs swingbench]$ ls
bin      launcher log          source  utils   wizardconfigs
configs  lib       README.txt  sql     winbin
[oracle@ogg123rs swingbench]$ cd bin
[oracle@ogg123rs bin]$ ls
bmcompare clusteroverview jsonwizard results2pdf sqlbuilder
ccwizard coordinator minibench sutil    swingbench
charbench data        oewizard shwizard tpcdswizard
[oracle@ogg123rs bin]$ ./swingbench
```

3. Once Swingbench starts, select the *SOE_Server_Side_V2* configuration file (Figure A-3).

Figure A-3:



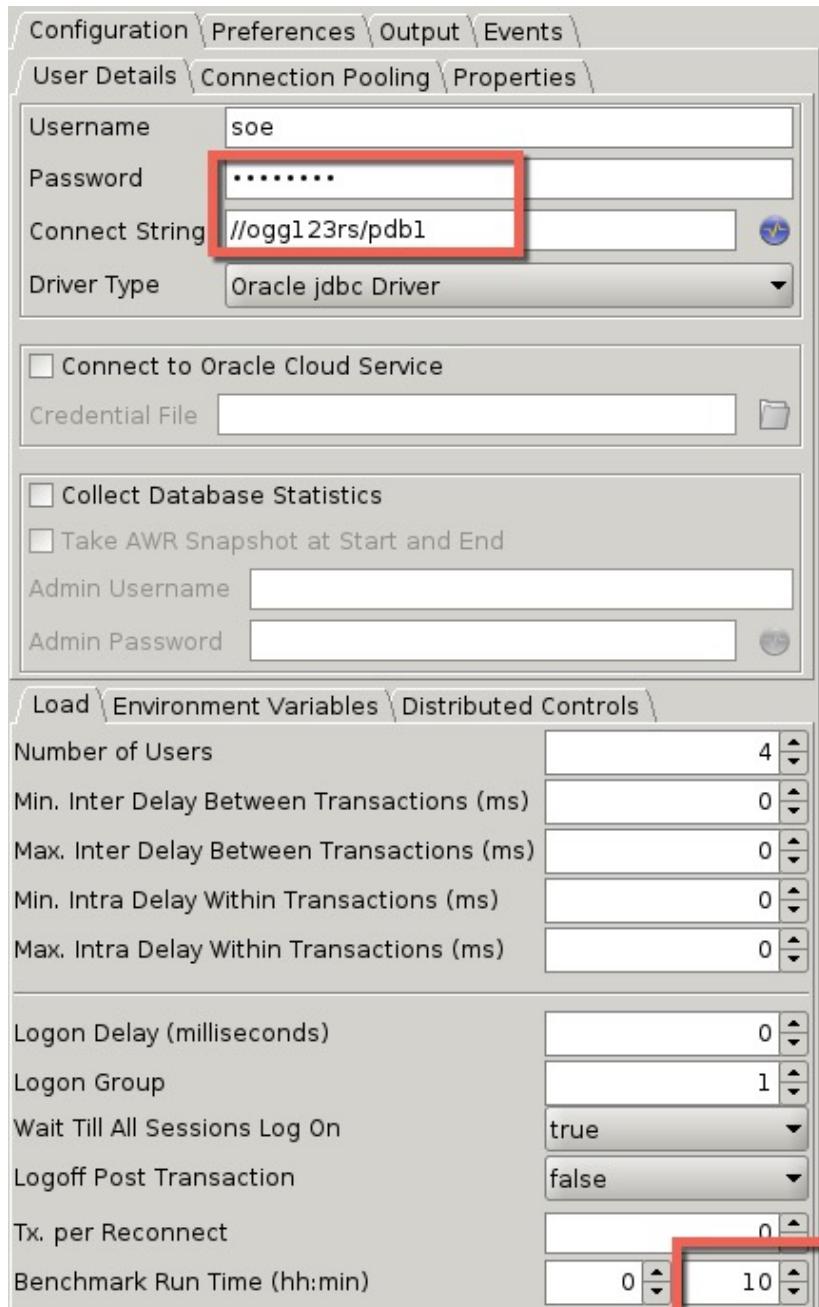
4. Once Swingbench is open, update the Password, Connect String, and Benchmark Run Time (Figure A-4)

Password: welcome1

Connect String: //ogg123rs/pdb1

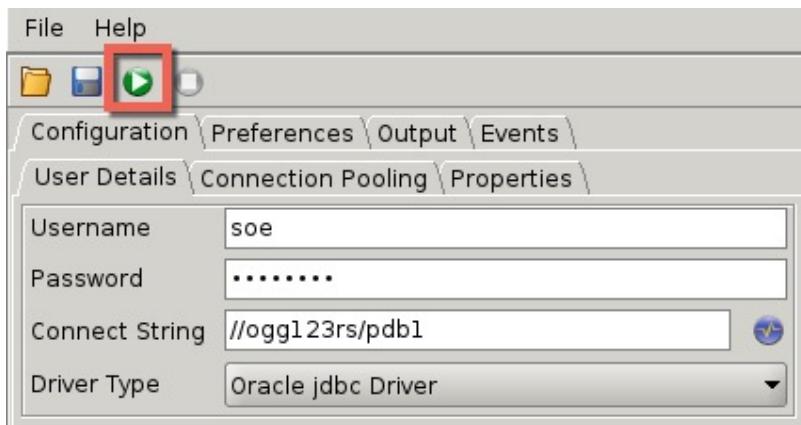
Benchmark Run Time: 10 mins

Figure A-4:



5. Execute Swingbench (Figure A-5)

Figure A-5:



At this point you should see activity on the table by looking at the Extract/Replicats. Correct any problems that may arise due.

B: Review Performance Metrics Server

Note: Although you can enable Performance Metric Server during a deployment, the interface and associated RESTful APIs are covered under the Oracle GoldenGate Management Pack License.

Steps:

1. Open the ServiceManager Page (Figure B-1)

Figure B-1:

Deployment:	Service	Port	Status:	Action	Details
Atlanta_1	Administration Server	16001	Running	Stop	⚙️
Atlanta_1	Distribution Server	16002	Running	Stop	⚙️
Atlanta_1	Performance Metrics Server	16004	Running	Stop	⚙️
Atlanta_1	Receiver Server	16003	Running	Stop	⚙️

2. Select the *Performance Metric Server* link from the deployment area (Figure B-2). This will open the Performance Metric Server page.

Figure B-2:

Deployment:	Service	Port	Status:	Action	Details
Atlanta_1	Administration Server	16001	Running	Stop	⚙️
Atlanta_1	Distribution Server	16002	Running	Stop	⚙️
Atlanta_1	Performance Metrics Server	16004	Running	Stop	⚙️
Atlanta_1	Receiver Server	16003	Running	Stop	⚙️

3. Notice that all processes with the deployment are listed at the top. These are clickable boxes that will take you into the process details (Figure B-3).

Figure B-3:

The screenshot shows the 'Metrics Server Overview' page in Mozilla Firefox. The title bar reads 'Metrics Server Overview - Mozilla Firefox'. The address bar shows the URL 'ogg123rs:16004'. The main content area is titled 'GoldenGate Processes' and displays six green status boxes for Admin Server, Dist. Server, EXT1, PM Server, Recv. Server, and Service Manager, all marked as 'Running'. Below this is a table titled 'Messages Overview' with the following data:

Date	Process	Severity	Code	Message
8/9/17 9:32:04 AM	EXT1	✓	OGG-01971	The previous message, 'INFO OGG-01021', repeated 1 times.
8/9/17 9:31:34 AM	EXT1	✓	OGG-01021	Command received from REST API: STATS TOTAL
8/9/17 9:24:47 AM	EXT1	✓	OGG-01021	Command received from REST API: GETLAG
8/9/17 9:24:39 AM	DISTSRVR	✓	OGG-02756	The definition for table PDB1.SOE.INVENTORIES is obtained from the trail file.
8/9/17 9:24:39 AM	DISTSRVR	✓	OGG-02756	The definition for table PDB1.SOE.ORDER_ITEMS is obtained from the trail file.
8/9/17 9:24:37 AM	EXT1	✓	OGG-06509	Using the following key columns for source table PDB1.SOE.INVENTORIES: PRODUCT_ID, WAREHOUSE_ID

4. Drill in on the Extract process (Figure B-4). This will provide you with real-time information about what the process is doing.

Note: This information is not retained in a repository, so this is only real-time. Historical information can be gained from other Oracle products like Oracle Enterprise Manager.

Figure B-4:

