



Oracle Autonomous Transaction Processing Hands-on Lab Guide



Oracle Autonomous Transaction Processing Hands on Lab Guide

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Lab Introduction

In this hands-on lab you will get first-hand experience with Oracle's new Autonomous Transaction Processing (ATP) service. Oracle ATP delivers a self-driving, self-securing, self-repairing database service that can instantly scale to meet demands of mission critical transaction processing and mixed workload applications.

The lab is structured in two sections

- Section 1 – Introduction to ATP
- Section 2 – Focus on Developer features

The audience for this hands-on-lab is expected to be application developers. The lab expects you to understand the basic concepts of an Oracle database, the UNIX command line and be comfortable using the vi editor or the built in gedit editor.

All attendees must complete the 'Introduction to ATP' section, but then can select labs from the other sections.

Lab software prerequisites

This lab requires you to install the following desktop application so that you can complete this hands-on lab:

- An PDF File reader.
- A VNC viewer. There are many VNC viewer packages both commercial and open source. Suggested packages are TigerVNC viewer or TightVNC Viewer but if you already have a preferred VNC viewer you can use this. TigerVNC viewer has a simpler install process, as it is a standalone executable, but has fewer features.

Some pdf viewers may have trouble correctly copying and pasting the format required for some of the scripts within this guide. All long SQL statements and scripts can be found in the **/home/oracle/labScripts** directory of the supplied VM. Where appropriate the script or SQL filename will be provided by the output of its listing within the guide.

Installing TigerVNC Viewer

Follow these steps to if you want to download and install TigerVNC Viewer.

macOS

A better VNC viewer for macOS is realVNC which can be obtained from
<https://www.realvnc.com/en/connect/download/viewer/macos/>

Windows 64-bit

Download '[vncviewer64-1.9.0.exe](#)' from <https://bintray.com/tigervnc/stable/tigervnc/1.9.0#files> and save it to your desktop. It is a self-contained executable file, which requires no further installation.

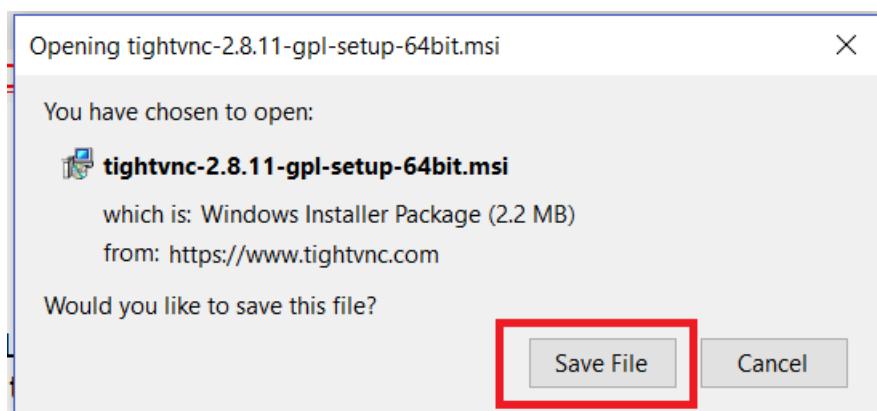
Installing TightVNC Viewer

Follow these steps if you want to download and install TightVNC Viewer.

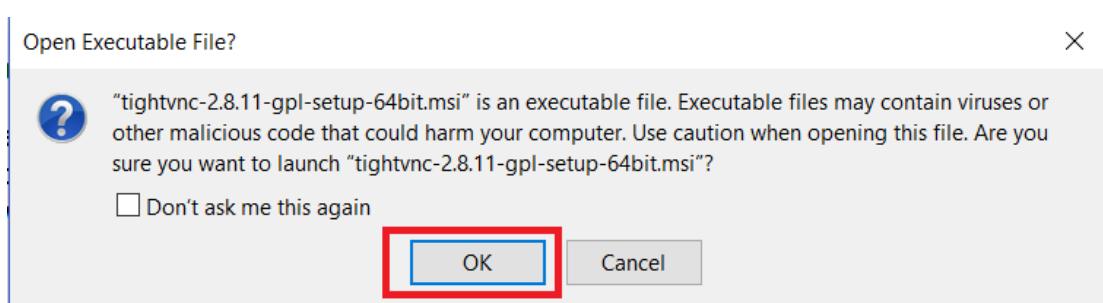
Windows 64-bit

Select the 'Installer for Windows (64-bit)' from <https://www.tightvnc.com/download.php>

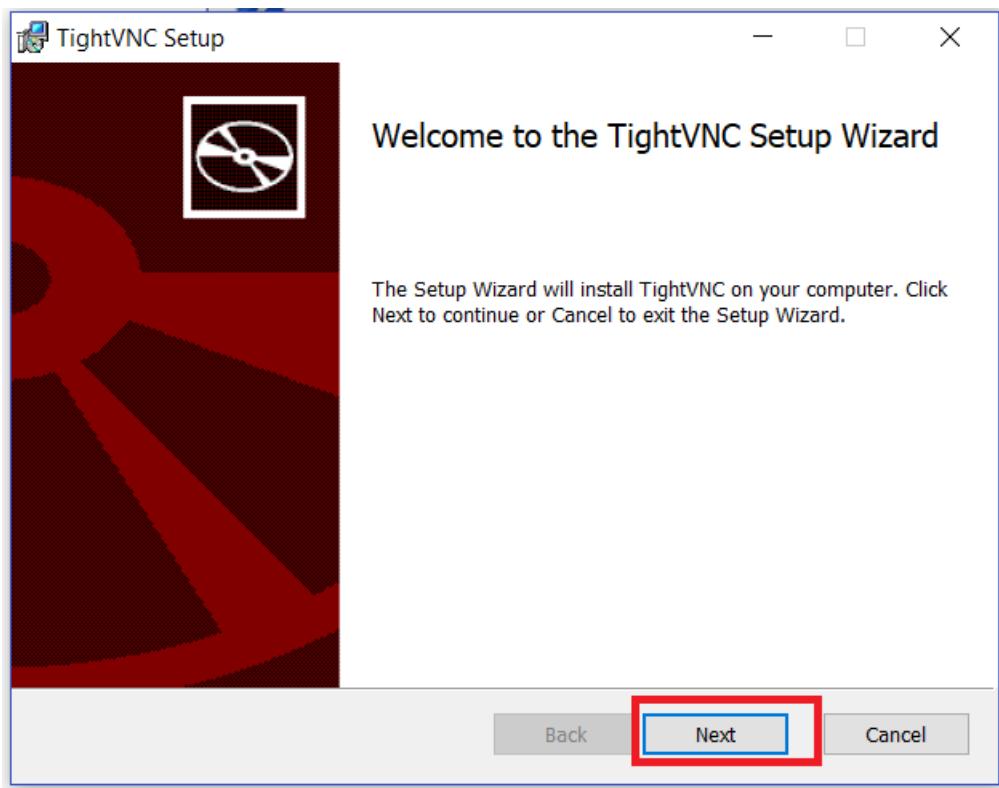
When prompted, select to save the file.



Locate the saved file on your machine and double click to execute. Windows will prompt you to check if you want to open the executable file. Select ok

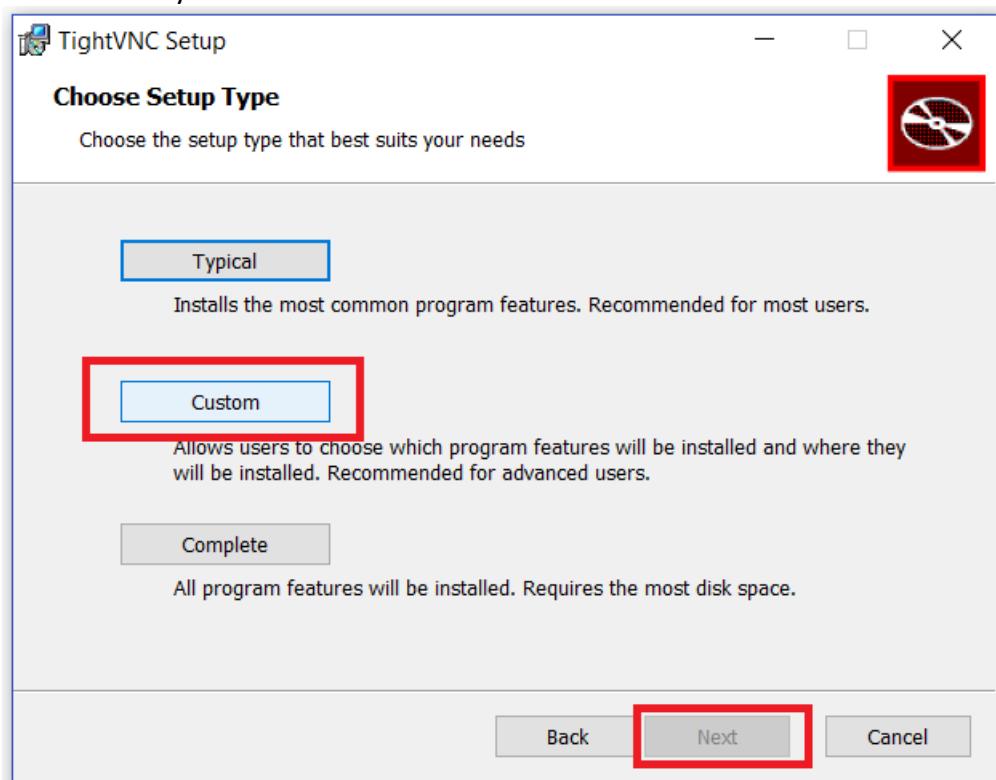


This will start the TightVNC install wizard. Select 'Next' to continue the install.

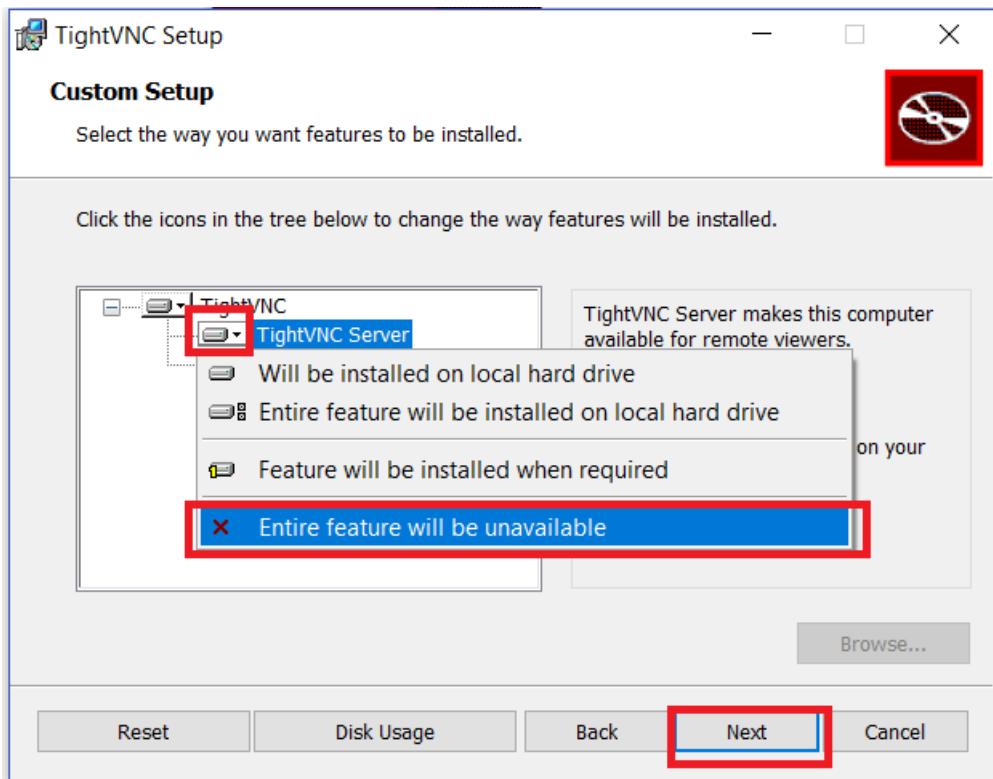


Review and accept the license terms if you agree. Select **Next** to continue.

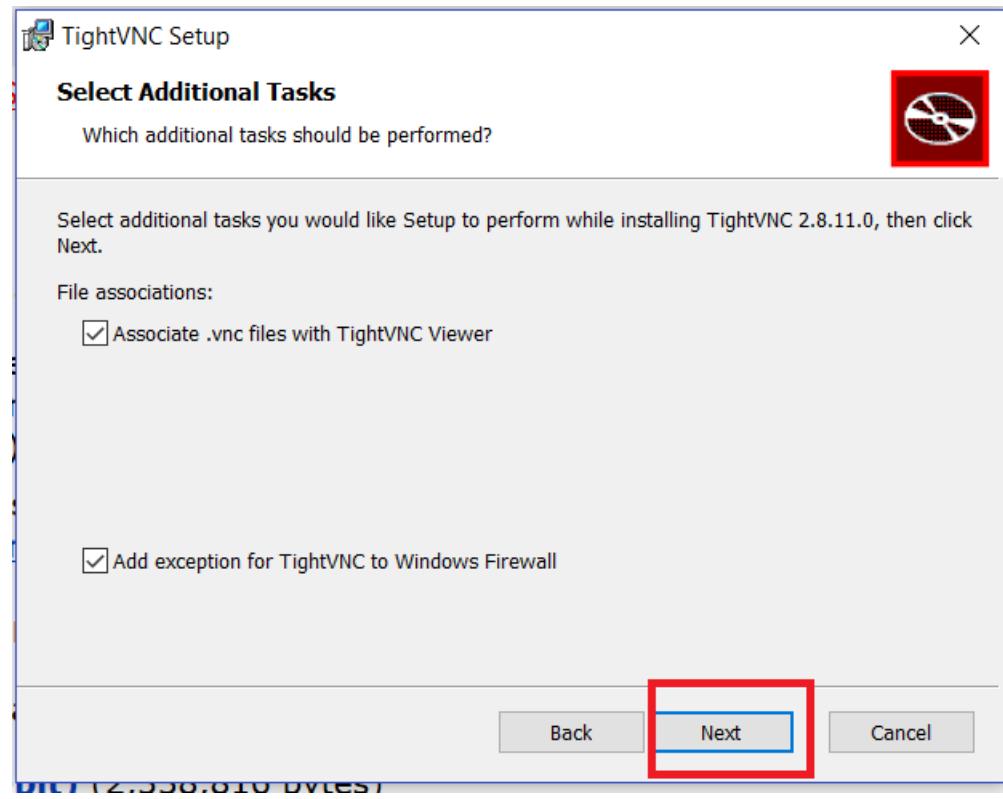
For this lab we only require the TightVNC Viewer, rather than the entire package. Select to carry out a **Custom** installation and select **Next**.



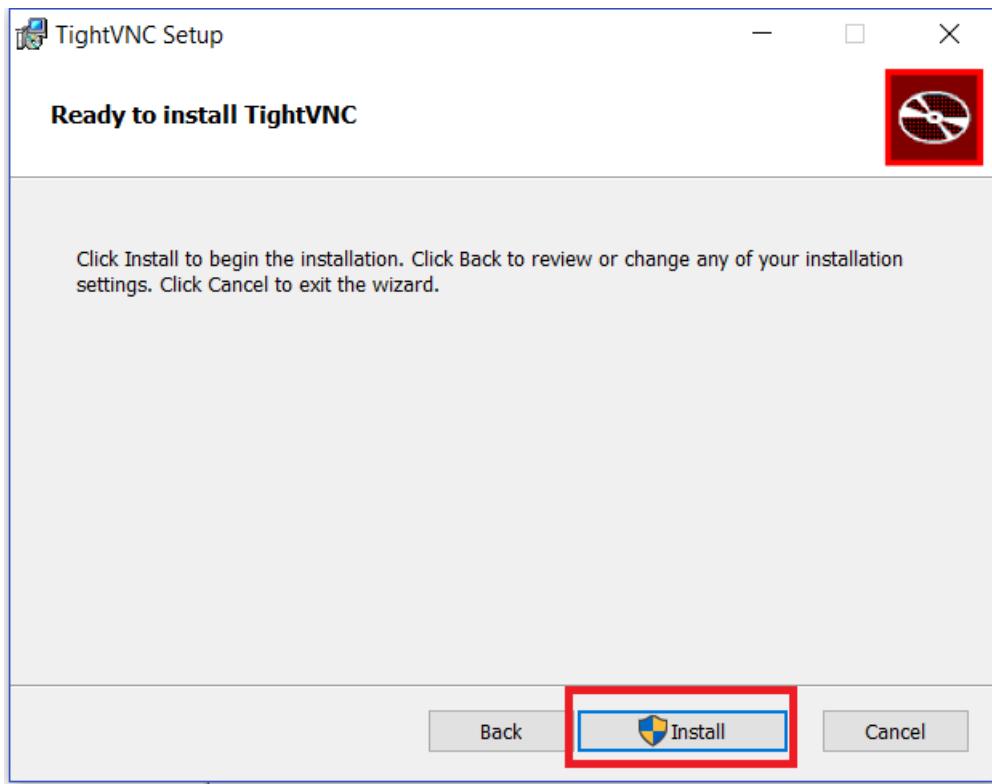
If you do not wish to install the server component, select the drop down next to **TightVNC Server** and select 'X Entire Feature will be unavailable'.



On the 'Select Additional Tasks' screen, choose if you want to change the file associations and the Firewall rules and select 'Next'



Select 'Install'



Section 1 - Introduction to Autonomous Transaction Processing



Lab 1 – Connecting to the Oracle Cloud

Lab 1. Connecting to the Oracle Cloud

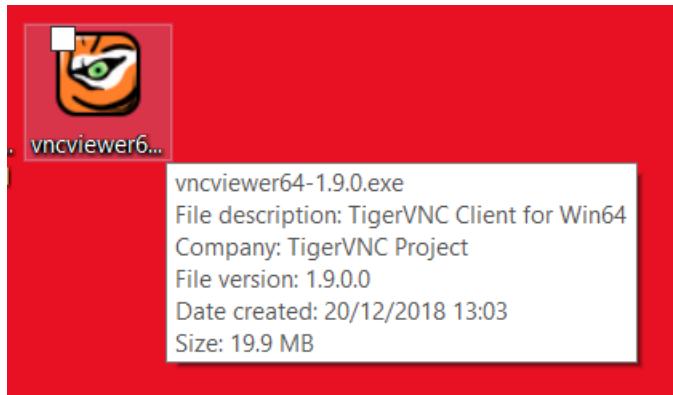
Objectives:

- Learn how to login to the Oracle Cloud Console
- Learn how to provision a new Autonomous Transaction Processing (ATP) Instance

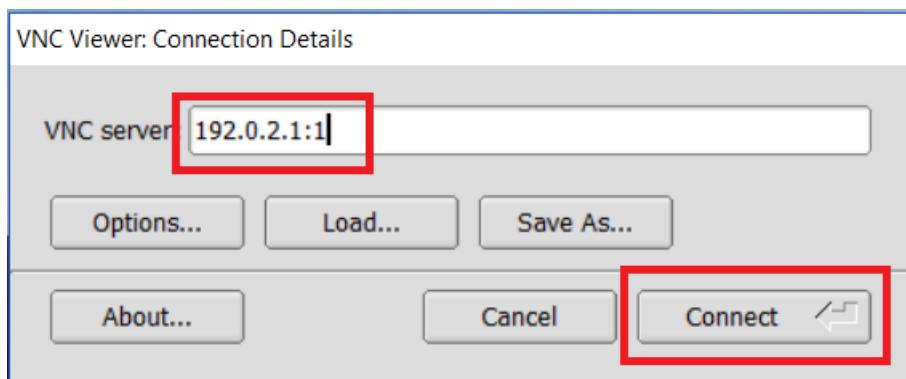
Connecting to your Lab Virtual Machine

To reduce the amount of software that needs to be installed on your local machine we have prepared a Linux virtual machine to act as your desktop.

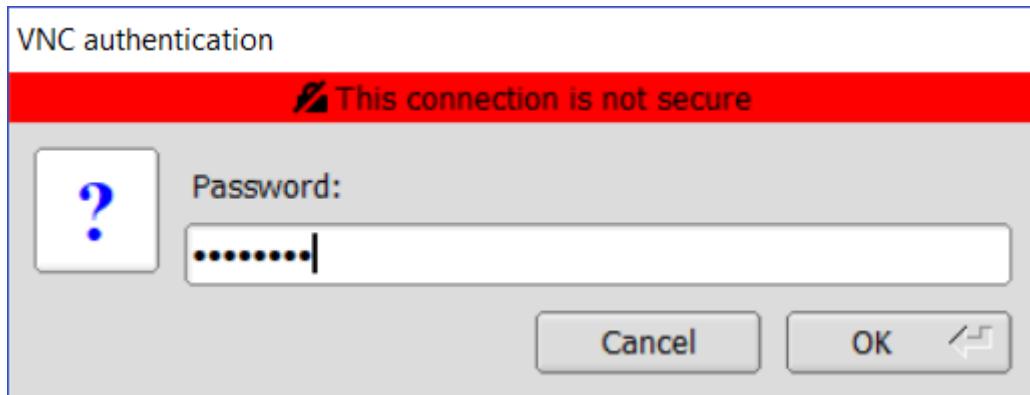
Start TigerVNC viewer (or your choice of VNC viewer) by double clicking on the icon on your local desktop.



Enter connection information provided by your lab leader and select **Connect**. You will use a different IP address than the example in the screenshot below.



Enter the supplied password and hit OK



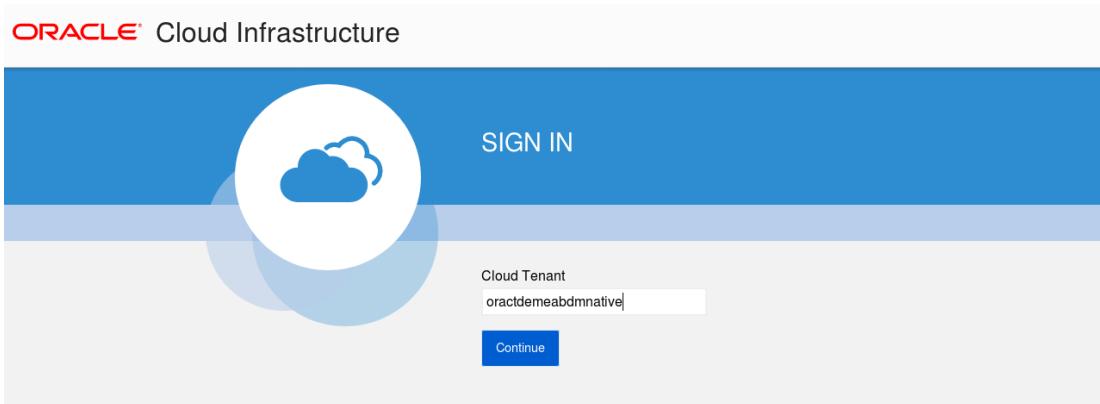
The VNC session will open, and an Oracle Linux desktop session will be displayed.



Signing in to the OCI Console

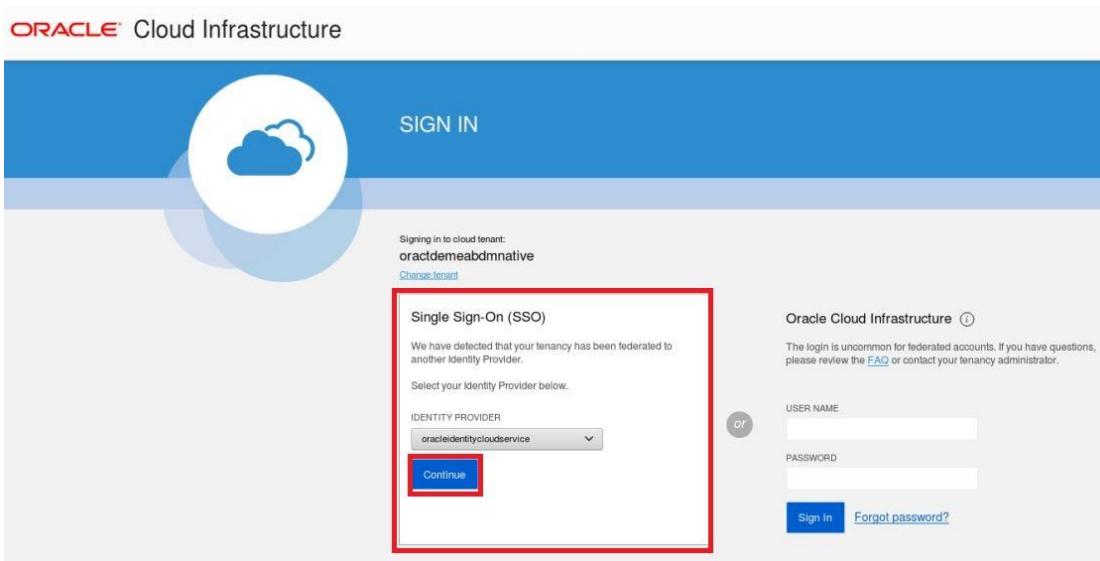
Start Firefox on your Lab VM by double clicking on the Firefox Logo.

Go to the [OCI console](https://console.eu-frankfurt-1.oraclecloud.com). <https://console.eu-frankfurt-1.oraclecloud.com> For this lab we are using the Frankfurt region, even though other regions may be geographically closer as this is where our tenancy has capacity to support the workshop.

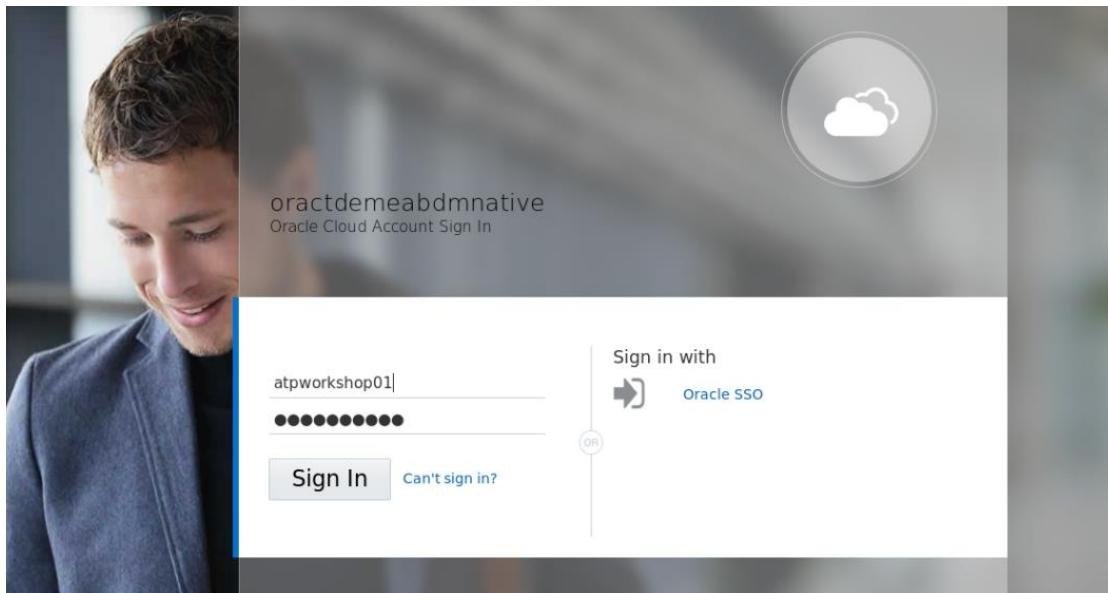


Enter a cloud tenancy of "**oractdemeabdmnative**" and click continue.

On the left-hand section of the page under the title "Single Sign-On" press the '**Continue**' button.



Enter your username and password. Click "**Sign In**".



This will bring you to the console home page.

Verify that your region is set to eu-frankfurt-1 on the top right hand side of your screen, if not, use the drop down list to select 'eu-frankfurt-1'

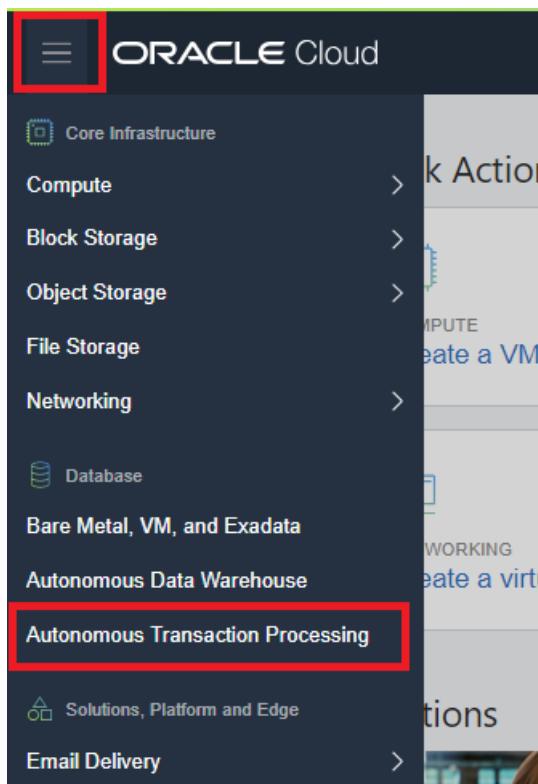


Locating your ATP Instance

As part of the preparation for this lab, ATP instances have been pre-created. Your lab leader will have demonstrated a provisioning process live and the process is documented using screenshots in Appendix A.

Click on the **MENU** link at the top left of the page.

This will produce a drop-down menu, where you should select "**Autonomous Transaction Processing**"



This will take you to the management console page for ATP in the root compartment of the tenancy. The red warning icon "Forbidden" indicates that the Policies within the tenancy does not allow your user to create ATP Instances in the root compartment.

The screenshot shows the 'Autonomous Database' management console. On the left, there are filters for 'List Scope' (COMPARTMENT: oractdemeabdmautodb (root)), 'Filters' (STATE: Any state), and 'WORKLOAD TYPE' (ATP). On the right, the main area displays a table titled 'Autonomous Databases in oractdemeabdmautodb (root) Compartment'. The table has columns: Name, State, Database Name, CPU Core Count, Storage (TB), Workload Type, and Created. A single row is present, showing a red exclamation mark icon and the word 'Forbidden' under the 'State' column. At the bottom, it says 'No Autonomous Databases < Page 1 >'.

To locate your ATP instance in this tenancy you need to select a compartment.

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Click on the pulldown menu marked **Compartment**. We will be using the **ATP_Workshop** compartment. Please select this from the drop down list

The screenshot shows the 'List Scope' section of the Oracle Autonomous Transaction Processing interface. A dropdown menu labeled 'COMPARTMENT' is open, showing a list of compartments. The top item, 'oractdemeabdmautodb (root)', is highlighted with a red box. Below it, under 'Search compartments', the 'ATP_Delegate' compartment is also highlighted with a red box. To its left, the 'ATP_Workshop' compartment is partially visible with a red box around its icon.

Note – Your list of compartments may be different to the one shown above. In these lab notes we will use the compartment called ATP_Delegate in all the screenshots/examples. Your compartment may be different.

The main page will now change to show the list of ATP instances within your compartment, as shown below:

Note - this lab uses the same tenancy and compartment for all lab attendees. You will see ATP instances listed on this page which have already been provisioned in preparation for this lab.

Autonomous Databases in ATP_Delegate Compartment						
Create Autonomous Database						
Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
dd25ATP	Available	dd25ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:13:58 GMT
dd24ATP	Available	dd24ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:09:57 GMT
dd23ATP	Available	dd23ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:05:56 GMT
dd22ATP	Available	dd22ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:01:55 GMT
dd21ATP	Available	dd21ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:57:54 GMT
dd20ATP	Available	dd20ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:53:53 GMT
dd19ATP	Available	dd19ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:49:52 GMT
dd18ATP	Available	dd18ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:45:51 GMT
dd17ATP	Available	dd17ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:41:50 GMT
dd16ATP	Available	dd16ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:37:49 GMT
dd15ATP	Available	dd15ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:33:48 GMT

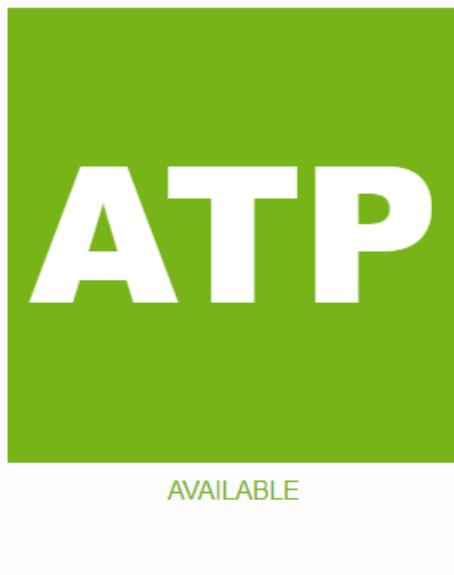
Note: the list of instances is sorted by provisioning date, not by name. Refer to your lab information sheet to check which ATP instance has been assigned to you for this lab.

Click on the name of your ATP instance from the list of instances. You may have to scroll down to locate it in the list.

Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
MELATRAIN01	Available	MELATRAIN01	1	1	Transaction Processing	Fri, 08 Mar 2019 08:38:38 GMT
dd25ATP	Available	dd25ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:13:58 GMT
dd24ATP	Available	dd24ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:09:57 GMT
dd23ATP	Available	dd23ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:05:56 GMT
dd22ATP	Available	dd22ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:01:55 GMT
dd21ATP	Available	dd21ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:57:54 GMT
dd20ATP	Available	dd20ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:53:53 GMT
dd19ATP	Available	dd19ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:49:52 GMT
dd18ATP	Available	dd18ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:45:51 GMT

This will display more information about your instance and you should notice the various menu buttons that help you manage your new instance

A summary of your instance lifecycle status is shown in the large box on the left.



Additional summary information about your instance is displayed, including the workload type. You can also see the Lifecycle Status reported in this region.

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Autonomous Database Information Tags

General Information

Database Name: MELATPTRAIN01
Workload Type: Transaction Processing
Compartment: oractdemeabdmautodb (root)/ATP_Workshop/ATP_HOL2
OCID: ...ago6ma Show Copy
Created: Tue, 18 Jun 2019 07:32:10 GMT
CPU Core Count: 1
Storage (TB): 1
License Type: Bring Your Own Licence
Database Version: 18c
Auto Scaling: Disabled ⓘ
Lifecycle State: Available

Infrastructure

Dedicated Infrastructure: No
Backup
Last Automatic Backup: Wed, 19 Jun 2019 03:41:03 GMT

Return to the main page which list all your ATP instances by clicking on the Autonomous Database link at the top of the page:

Autonomous Database x Autonomous Database Details

MELATPTRAIN01

DB Connection Service Console

Autonomous Database Information T

General Information

Database Name: MELATPTRAIN01
Workload Type: Transaction Processing
Compartment: oractdemeabdmautodb
OCID: ...ago6ma Show Copy
Created: Tue, 18 Jun 2019 07:32:10 GMT
CPU Core Count: 1

You are now ready to start Lab 2.



Lab 2 - Securely Connecting to Autonomous Transaction Processing

Lab 2. Securely Connecting to Autonomous Transaction Processing

Objectives:

- Learn about the different Consumer Groups in Autonomous Transaction Processing (ATP)
- Learn how to download the credential wallet for your ATP instance
- Learn how to securely connect desktop tools to ATP

Applications and tools connect to ATP databases by using Oracle Net Services (also known as SQL*Net). SQL*Net supports a variety of connection types to ATP databases, including Oracle Call Interface (OCI), ODBC drivers, JDBC OC, and JDBC Thin Driver. Unlike other cloud services you do not get a UNIX command line interface on the system hosting your ATP instance, this reduces the complexity and need of UNIX skills required to administer it.

The sample SQL scripts for this lab are available in your VM under the directory `/home/oracle/labScripts/lab2`.

Managing Priorities on Autonomous Transaction Processing

The priority of user requests in ATP is determined by the database service the user is connected to. Users are required to select a service when connecting to the database. The service names are in the format:

- *database_name_tpurgent*
- *database_name_tp*
- *database_name_low*
- *database_name_medium*
- *database_name_high*

These services map to the LOW, MEDIUM, HIGH, TP and TPURGENT consumer groups. For example, a user connecting to `database_name_low` service uses the consumer group LOW.

The basic characteristics of these consumer groups are:

- **tpurgent:** The highest priority application connection service for time critical transaction processing operations. This connection service supports manual parallelism.
- **tp:** A typical application connection service for transaction processing operations. Queries run serially.

- **high:** A high priority application connection service for reporting and batch operations with low concurrency requirements. All operations run in parallel (if you have multiple OCPU assigned to your instance) and are subject to queuing.
- **medium:** A typical application connection service for reporting and batch operations. All operations run in parallel and are subject to queuing.
- **low:** A lowest priority application connection service for high concurrency reporting or batch processing operations. Queries run serially.

By default, the CPU/IO shares assigned to the consumer groups TPURGENT, TP, HIGH, MEDIUM, and LOW are 12, 8, 4, 2, and 1, respectively. The shares determine how much CPU/IO resources a consumer group can use with respect to the other consumer groups. With the default settings the consumer group TPURGENT will be able to use 12 times more CPU/IO resources compared to LOW, when needed. The consumer group TP will be able to use 4 times more CPU/IO resources compared to MEDIUM, when needed.

To change the default values for the shares you can use the PL/SQL procedure `cs_resource_manager.update_plan_directive`.

As a database administrator and an application developer you need to select the database service based on your performance, concurrency and parallelism requirements.

Downloading the credentials wallet

As ATP only accepts secure connections to the database, you need to download the wallet file containing your credentials first.

The wallet is downloaded from the ATP service console, or from the "**DB Connection**" button on the instance details page. To access the ATP Service console, find your database on the table listing ATP instances and click on the three vertical dots on the right-hand side.

In the pop-up menu select **Service Console**.

Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
MELATTRAIN01	Available	MELATTRAIN01	1	1	Transaction Processing	Fri, 08 Mar 2019 08:38:38 GMT
dd25ATP	Available	dd25ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:13:58 GMT
dd24ATP	Available	dd24ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:09:57 GMT
dd23ATP	Available	dd23ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:05:56 GMT
dd22ATP	Available	dd22ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:01:55 GMT
dd21ATP	Available	dd21ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:57:54 GMT
dd20ATP	Available	dd20ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:53:53 GMT
dd19ATP	Available	dd19ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:49:52 GMT
dd18ATP	Available	dd18ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:45:51 GMT

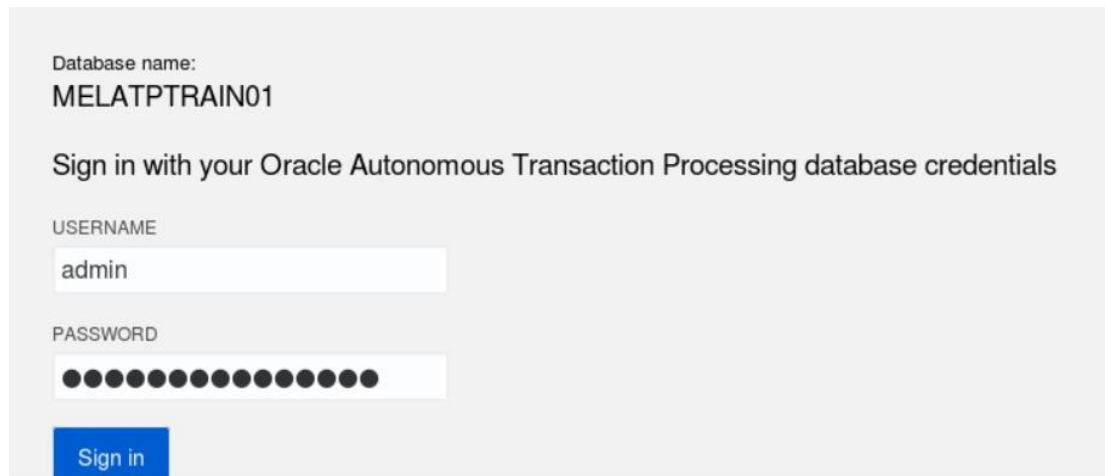
Oracle Autonomous Transaction Processing Hands-on Lab Guide

This will open a new browser tab for the Service Console.

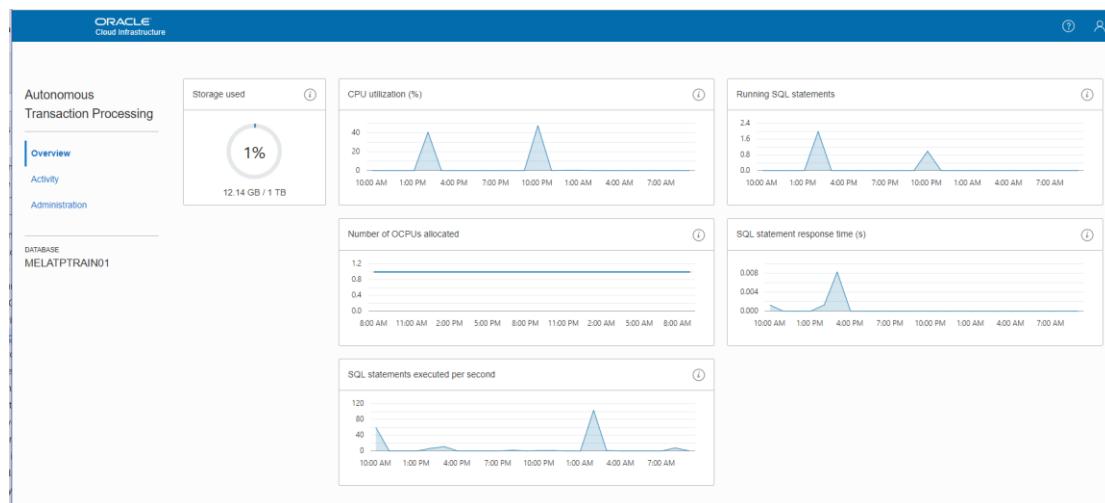
If you are prompted to do so, sign in to the service console with the following information.

Username: admin

Password: The administrator password you specified during provisioning



You will now see the main **dashboard** page for your instance. As we have not generated any load into the instance, it may have 'No data to display' in the information panes. Later lessons will explore the **Overview** and **Activity** tabs in more detail.



Click the "**Administration**" link in the left-hand side menu and click "**Download Client Credentials**" to download the wallet.

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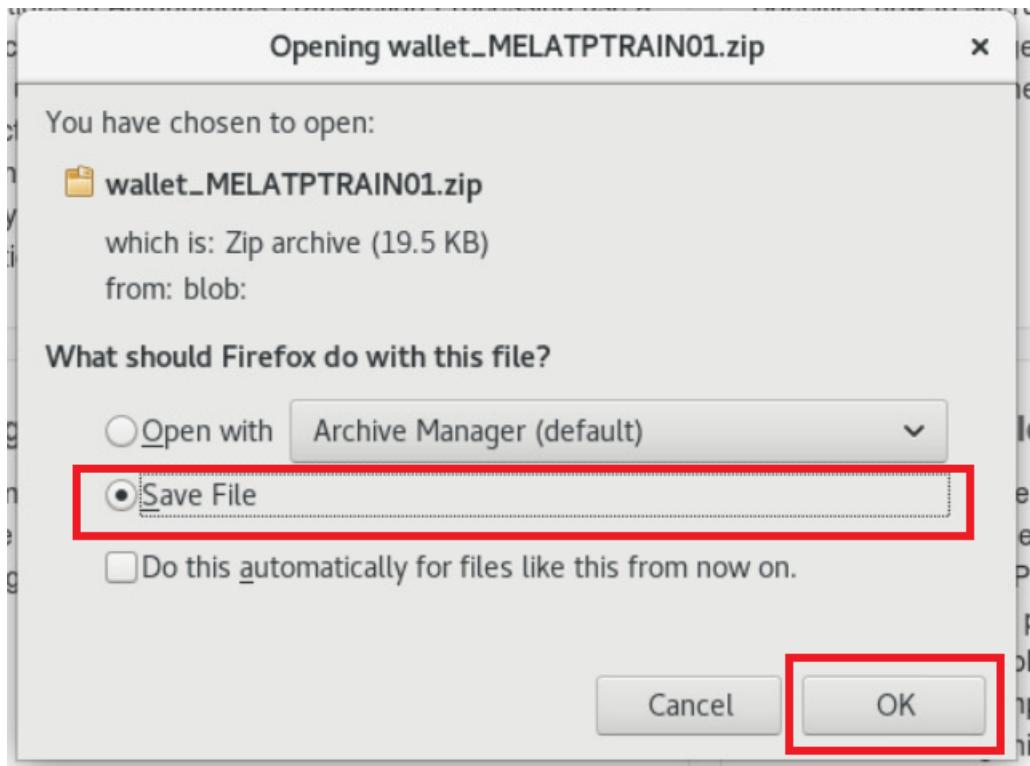
The screenshot shows the Oracle Cloud Infrastructure console with the Autonomous Transaction Processing dashboard. The 'Administration' tab is selected. A red box highlights the 'Download Client Credentials (Wallet)' section, which contains instructions and a link to download the wallet file.

Specify a password for the wallet. Some applications require this password when connecting to the database, for example some JDBC thin applications will require this password to use as the keystore password. Note that this password is separate from the admin password and can be set to a different value. For this lab, you could use the value ATPwelcome-1234 or another memorable password of your choice.

Click Download to download the wallet file to your lab virtual machine.

The screenshot shows the 'Download Client Credentials (Wallet)' dialog box. It contains fields for 'Password' and 'Confirm password', both filled with a series of dots. A red box highlights the 'Download' button at the bottom right.

Select to Save the file, and then click ok. This will save the file in the default downloads location \$HOME/Downloads



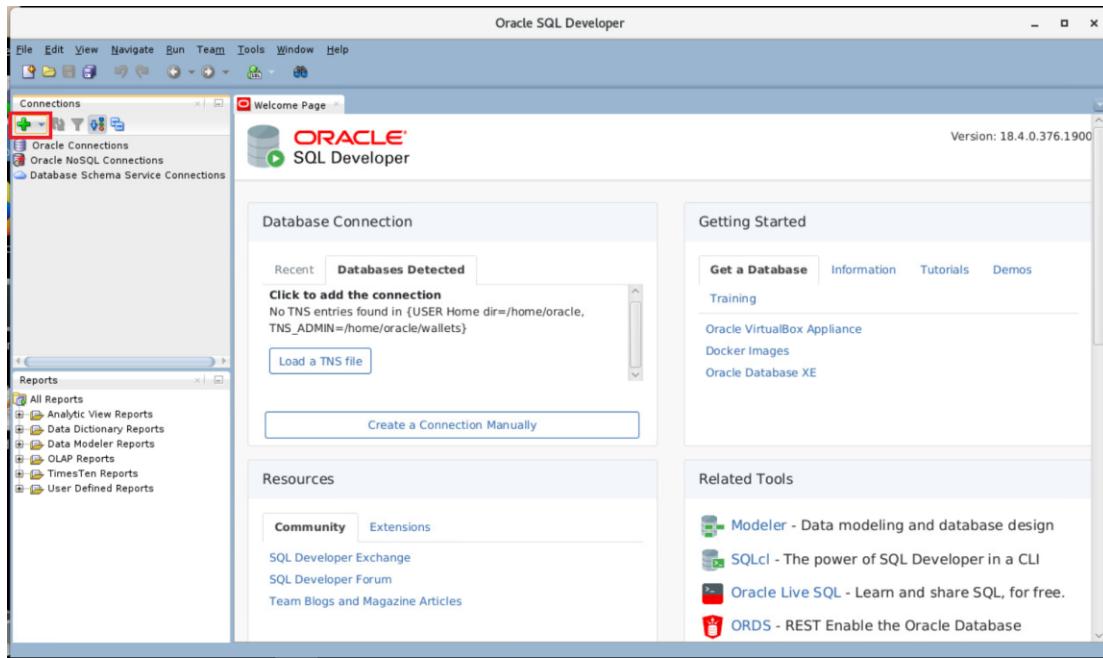
Connecting to the database using SQL Developer

Minimise your Firefox window, and on your Lab VM desktop, start SQL Developer by double clicking on the icon.

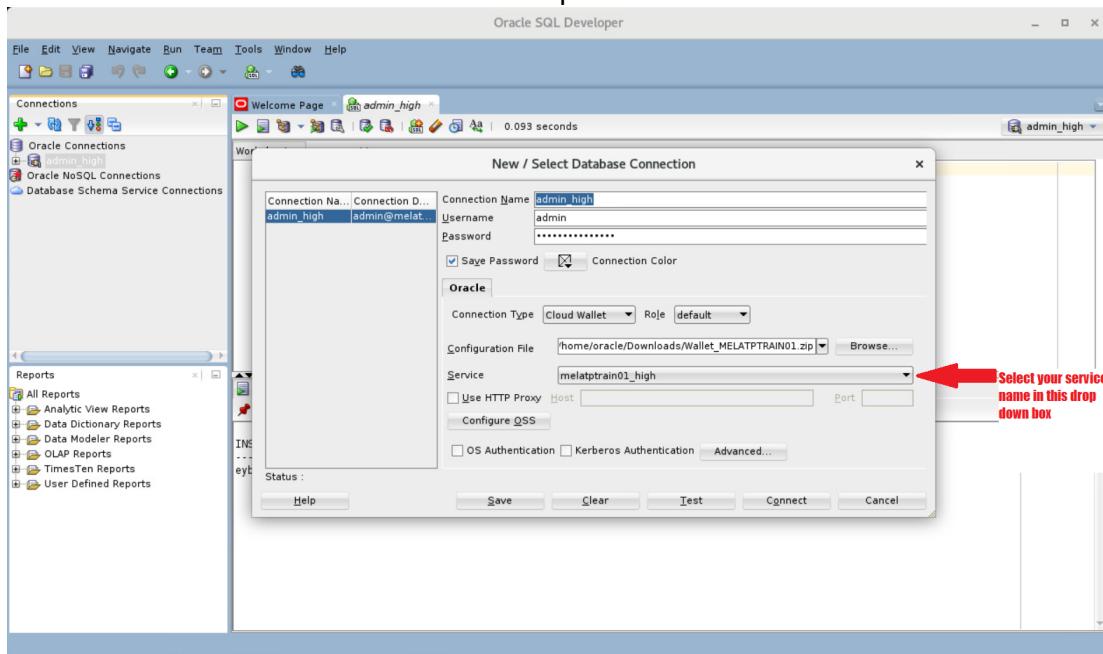


Click the Create Connection icon in the Connections toolbox on the top left of the SQL Developer homepage.

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This will open the **New>Select Database Connection Screen**. See below the screenshot for information on how to complete this form.



Connection Name: admin_high

Username: admin

Password: The admin password you specified during the provisioning process.

Connection Type: Cloud Wallet

Configuration File: Enter the full path for the wallet file you downloaded earlier in the lab or click the Browse button to point to the locate the file (by default it will be under your Downloads directory).

Service: The Wallet will contain the service names for all the ATP databases in the tenancy so this list could be long. Please make sure that you are

selecting your database. As discussed previously there are 5 pre-configured database services for each database. Pick `<your databasename>_high` for this lab. For example, if you created a database named **melatptrain01** select **melatptrain01_high** as the service.

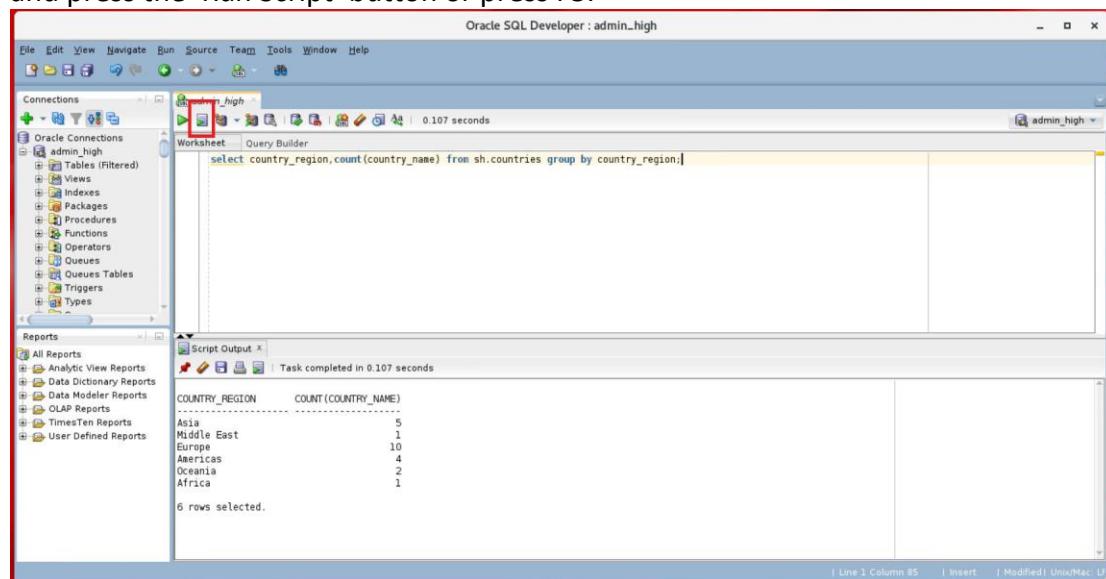
Test your connection by clicking the Test button, if it succeeds save your connection information by clicking Save, then connect to your database by clicking the Connect button.

You can now run a test query using the sample data in the SH schema.

In the SQL Worksheet enter the following SQL:

```
select country_region, count(country_name) from sh.countries group by country_region;
```

and press the ‘Run Script’ button or press F5.



Note – You do not have to use GUI tools to access an ATP instance. Other Oracle Client utilities such as SQL Plus can connect to the ATP instance using a wallet.

(Optional) Secure access to your Autonomous Database using Access Control Lists

An Access Control List (ACL) provides additional protection for your Autonomous Database by allowing only the IP addresses in the list to connect to the database.

When you provision a new Autonomous Database, it does not have an initial ACL. You can use the Oracle Cloud Infrastructure Console, API, or CLI to create an ACL for

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the database by adding a minimum of one entry to the list. An entry can be a comma-separated list of CIDR blocks or public IP addresses. You can modify the list at any time. Setting the ACL for the Autonomous Database does not block administration activities via the Service Console or the Oracle Cloud Infrastructure Console. Removing all entries from the list makes the database accessible to all clients with the applicable credentials.

In this exercise you will:

- Create an ACL that will block your access to your Autonomous Database.
- Alter this ACL to only allow your lab VM access to your Autonomous Database.

It is important to complete this exercise successfully to allow subsequent labs to complete.

Creating your initial ACL

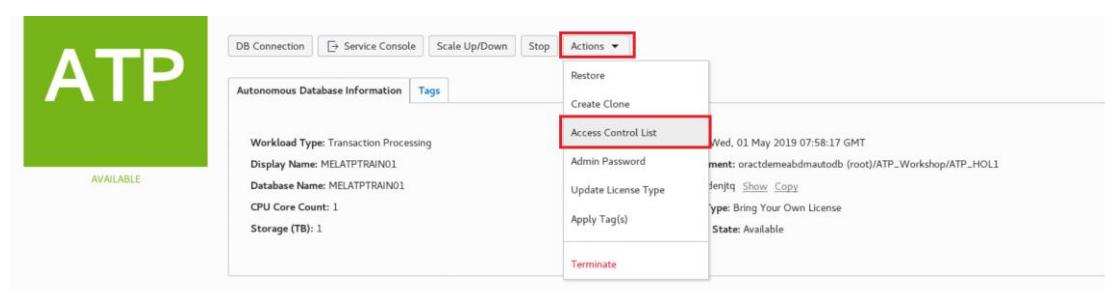
Navigate back to the **Autonomous Transaction Processing** page in the lab compartment.

Click on the name of your database to open the instance details screen.

Create Autonomous Database						
Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
MELATPTRAIN01	Available	MELATPTRAIN01	1	1	Transaction Processing	Wed, 01 May 2019 07:58:17 GMT
ss06ATP	Available	ss06ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 13:03:53 GMT
ss05ATP	Available	ss05ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:59:51 GMT
ss04ATP	Available	ss04ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:55:50 GMT
ss03ATP	Available	ss03ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:51:49 GMT
ss02ATP	Available	ss02ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:47:48 GMT
ss01ATP	Available	ss01ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:43:47 GMT

Displaying 7 Autonomous Databases < Page 1 >

In the **Actions** drop down select "**Access Control List**"



In the pop up box enter the IP Address **192.168.28.1** and select "**Update**". This is a non-routable IP address that is not in use in the lab environment. Once you set an ACL only new connections from IP addresses that match the ACL will be allowed to connect.

Access Control List [help](#) [cancel](#)

Specify the IP addresses allowed to access this database. You can use a comma-separated list to enter multiple IP addresses. An access control list blocks all IP addresses that are not in the list from accessing the database.

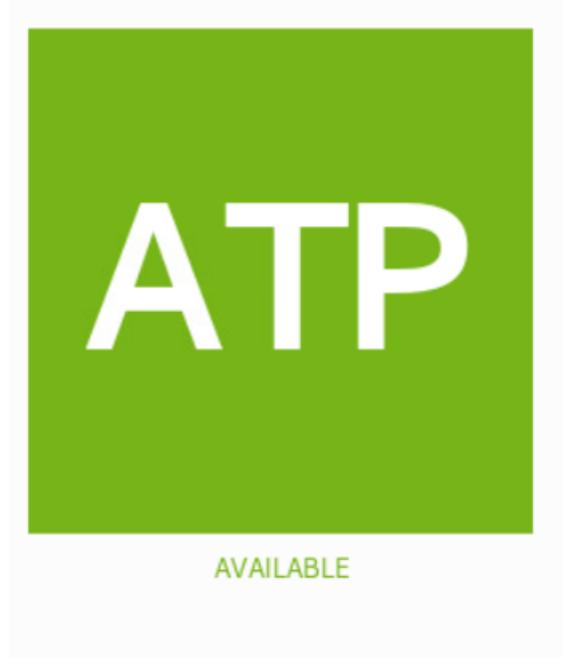
IP NOTATION TYPE IP ADDRESSES [x](#)

[+ Additional Entry](#)

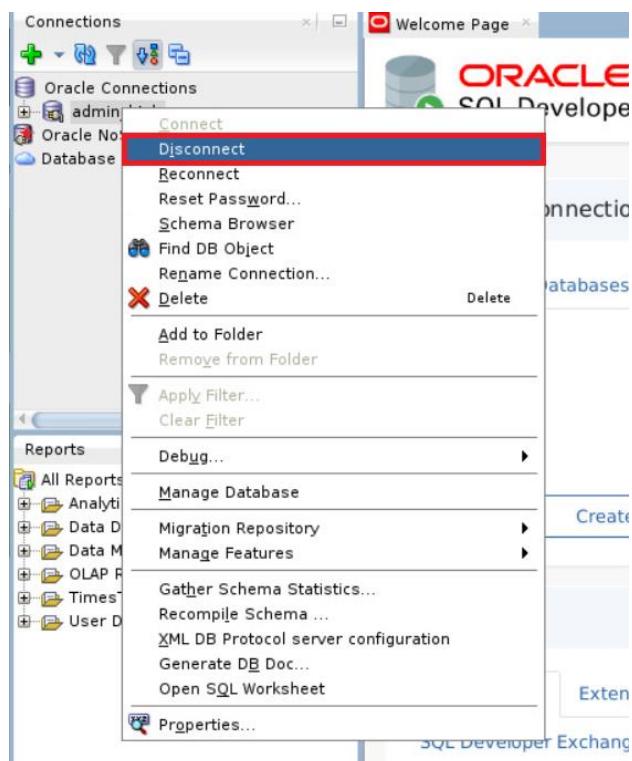
The Lifecycle status will change to "**Updating**".



Wait until the Lifecycle status is "**Available**"

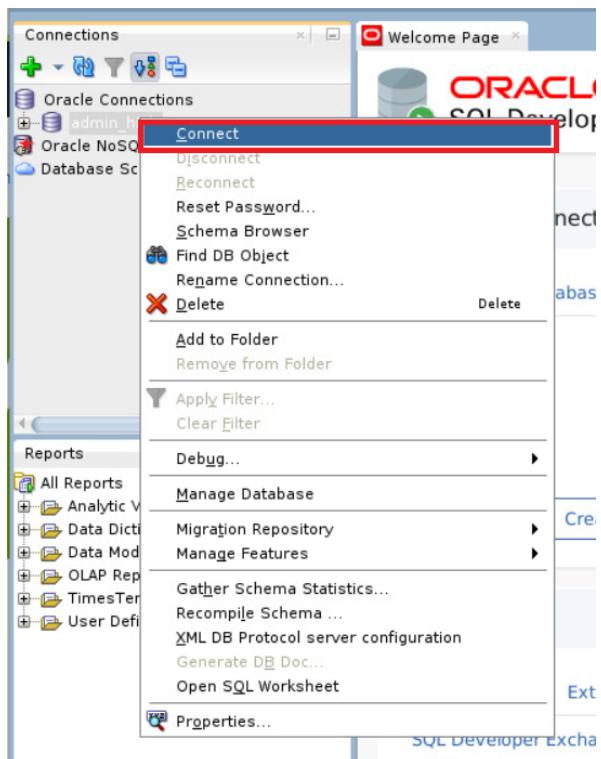


Return to your SQL Developer window. Select your "**admin_high**" connection, right click to bring up the menu and select "**Disconnect**".

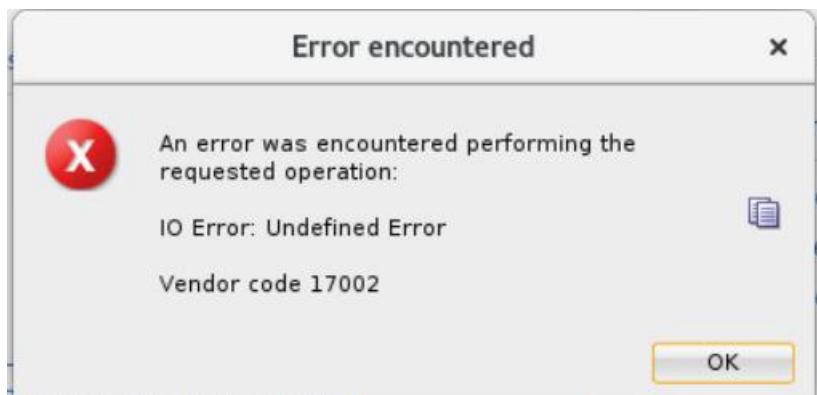


Connect to your database again. Select your "**admin_high**" connection, right click to bring up the menu and select "**Connect**".

Oracle Autonomous Transaction Processing Hands-on Lab Guide



The connection to the database should fail with "IO Error: Undefined Error"



Note – If your connection to the database succeeds, this usually means that there is a problem with the definition of your admin_high connection and the 'Service Name' was not set to your database.

Correcting the ACL to allow connections

To ensure Return to your Firefox browser and navigate back to the **Autonomous Transaction Processing** page in the lab compartment.

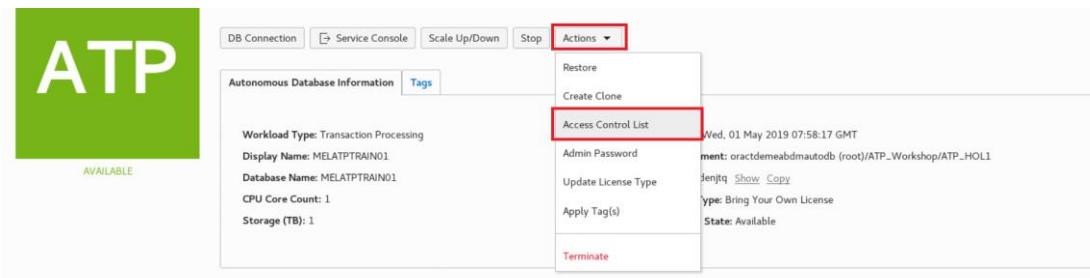
Click on the name of your database to open the instance details screen.

Oracle Autonomous Transaction Processing Hands-on Lab Guide

Create Autonomous Database						
Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
MELATPTRAIN01	Available	MELATPTRAIN01	1	1	Transaction Processing	Wed, 01 May 2019 07:58:17 GMT
ss06ATP	Available	ss06ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 13:03:53 GMT
ss05ATP	Available	ss05ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:59:51 GMT
ss04ATP	Available	ss04ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:55:50 GMT
ss03ATP	Available	ss03ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:51:49 GMT
ss02ATP	Available	ss02ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:47:48 GMT
ss01ATP	Available	ss01ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:43:47 GMT

Displaying 7 Autonomous Databases < Page 1 >

In the **Actions** drop down select "Access Control List"



In the pop up box use the small x next to the IP address to delete the existing entry.

Access Control List [help](#) [cancel](#)

Specify the IP addresses allowed to access this database. You can use a comma-separated list to enter multiple IP addresses. An access control list blocks all IP addresses that are not in the list from accessing the database.

IP NOTATION TYPE	IP ADDRESSES
IP Address	<input style="width: 100%; height: 25px; margin-bottom: 5px;" type="text" value="192.168.28.1"/> x
+ Additional Entry	
Update	

Select the "**Additional Entry**" button to create a new ACL entry.

Access Control List [help](#) [cancel](#)

Specify the IP addresses allowed to access this database. You can use a comma-separated list to enter multiple IP addresses. An access control list blocks all IP addresses that are not in the list from accessing the database.

+ Additional Entry	
Update	

Oracle Autonomous Transaction Processing Hands-on Lab Guide

Enter the IP Address of your Lab Virtual Machine. This is the address you used to connect using the VNC viewer, without the ':1' on the end. Each Virtual Machine has its own IP address.

For example: if your VNC connection was to 192.0.2.1:1 the IP address you enter will be 192.0.2.1.

Access Control List [help](#) [cancel](#)

Specify the IP addresses allowed to access this database. You can use a comma-separated list to enter multiple IP addresses. An access control list blocks all IP addresses that are not in the list from accessing the database.

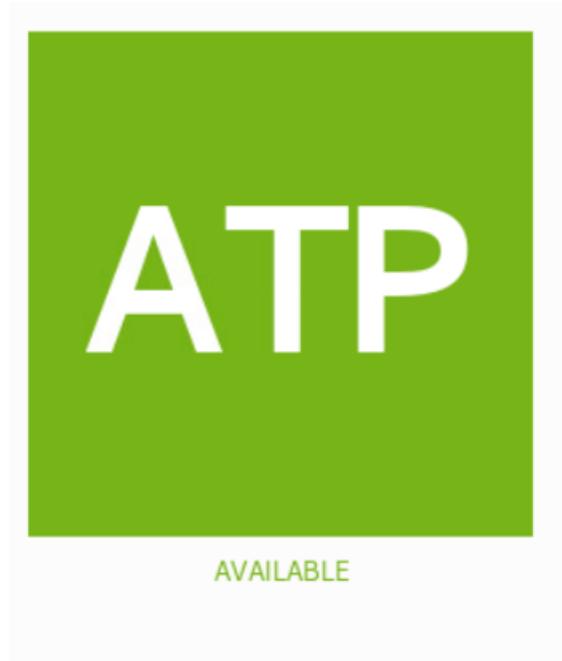
IP NOTATION TYPE IP ADDRESSES

Select "**Update**".

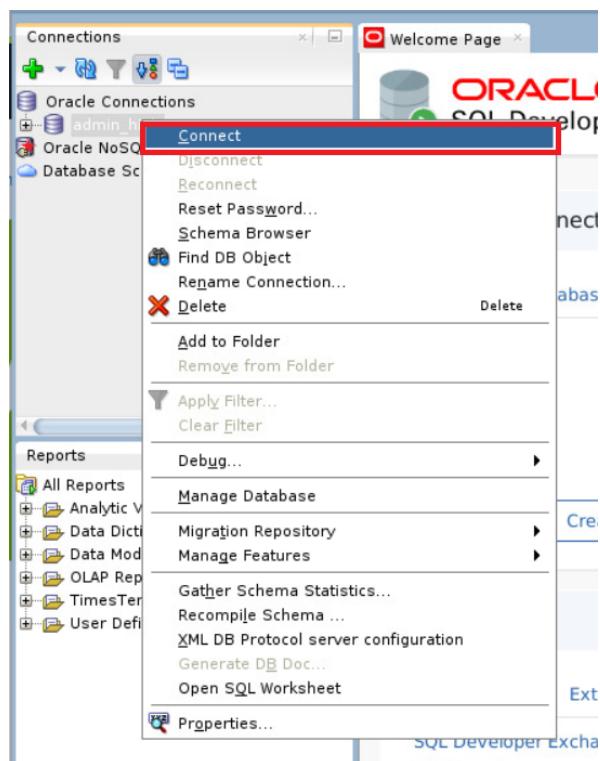
The Lifecycle status will change to "**Updating**".



Wait until the Lifecycle status is "**Available**"



Return to your SQL Developer window. Connect to your database again. Select your "**admin_high**" connection, right click to bring up the menu and select "**Connect**".



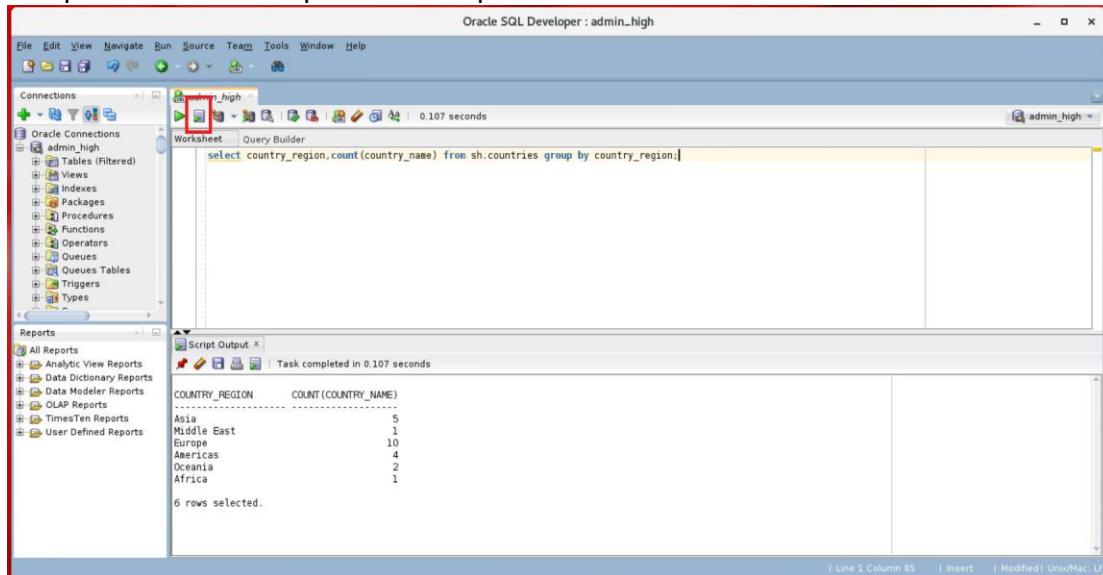
The connection should succeed. Test this by running a simple SQL query in SQL Worksheet.

In the SQL Worksheet enter the following SQL:

Oracle Autonomous Transaction Processing Hands-on Lab Guide

```
select country_region, count(country_name) from sh.countries group by country_region;
```

and press the 'Run Script' button or press F5.



Note – If your connection to the database still fails, verify that the IP address that you have specified for your ACL is correct.

Remove all the ACL entries

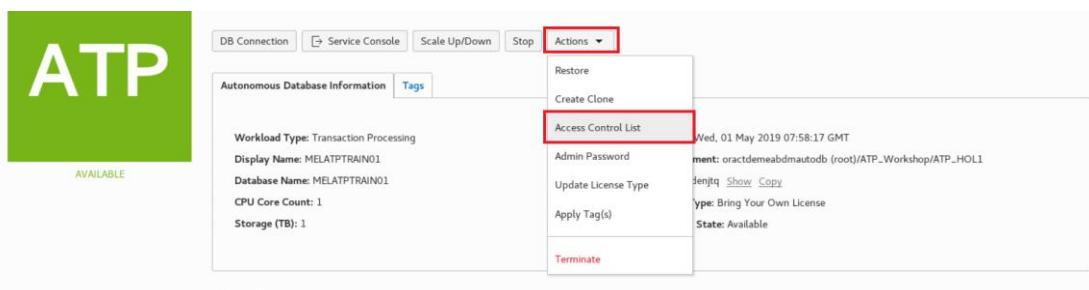
Return to your Firefox browser and navigate back to the **Autonomous Transaction Processing** page in the lab compartment.

Click on the name of your database to open the instance details screen.

Create Autonomous Database						
Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
MELATPTRAIN01	Available	MELATPTRAIN01	1	1	Transaction Processing	Wed, 01 May 2019 07:58:17 GMT
ss06ATP	Available	ss06ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 13:03:53 GMT
ss05ATP	Available	ss05ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:59:51 GMT
ss04ATP	Available	ss04ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:55:50 GMT
ss03ATP	Available	ss03ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:51:49 GMT
ss02ATP	Available	ss02ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:47:48 GMT
ss01ATP	Available	ss01ATP	1	1	Transaction Processing	Fri, 26 Apr 2019 12:43:47 GMT

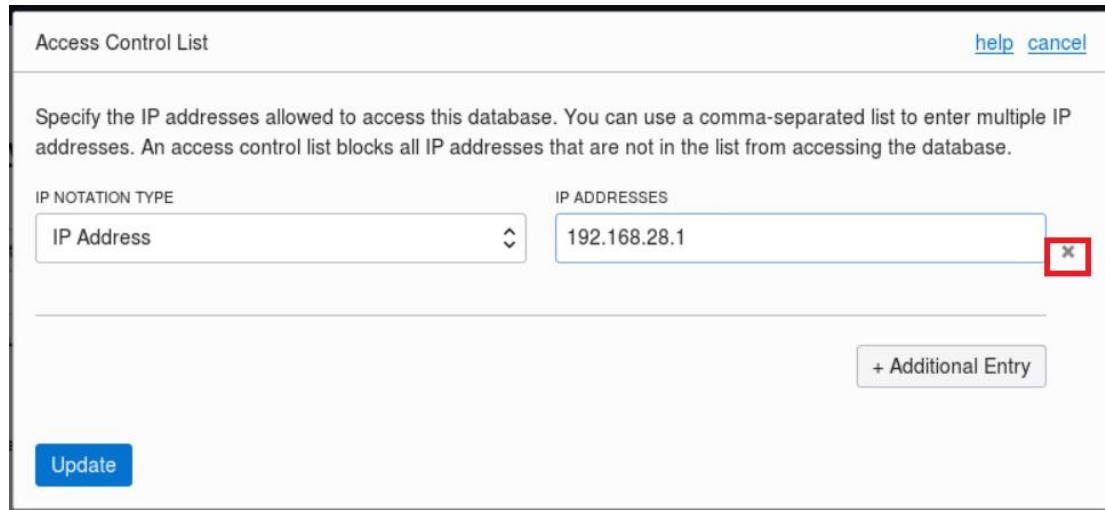
In the **Actions** drop down select "Access Control List"

Oracle Autonomous Transaction Processing Hands-on Lab Guide



The screenshot shows the Oracle ATP console interface. On the left, there's a green box labeled 'ATP' with 'AVAILABLE' underneath. The main area displays 'Autonomous Database Information' with various details like 'Workload Type: Transaction Processing', 'Display Name: MELATPTRAIN01', etc. A dropdown menu titled 'Actions' is open, and the 'Access Control List' option is highlighted with a red box.

In the pop up box use the small x next to the IP address to delete the existing entry.



The screenshot shows the 'Access Control List' dialog box. It has sections for 'IP NOTATION TYPE' (set to 'IP Address') and 'IP ADDRESSES' (containing '192.168.28.1'). A red box highlights the 'x' button next to the IP address. There's also a '+ Additional Entry' button and a blue 'Update' button at the bottom.

The pop-up will now have no IP Addresses or CIDR blocks specified. Select "Update" to save this change.



The screenshot shows the 'Access Control List' dialog box again, but this time it is empty (no IP addresses listed). The blue 'Update' button is highlighted with a red box.

The Lifecycle status will change to "**Updating**".



ATP

UPDATING...

Wait until the Lifecycle status is "Available"



ATP

AVAILABLE

Once you have successfully removed all the ACL entries you have completed Lab 2.

Section 2- Focus on Developers



Microservices on Kubernetes and Autonomous Database

Microservices on Kubernetes and Autonomous Database

This lab will walk you through the steps to set up a CI/CD environment for developing Microservices, based on the automation possible in Developer Cloud and deploying all components on Oracle's Managed Container platform and the ATP database.

The lab is hosted from GitHub, please use the below link to access the hands on guide for this lab. You will continue to use your VM and ATP created for the previous sections.

[https://github.com/oracle/cloudtestdrive/blob/master/
ATP/readme.md](https://github.com/oracle/cloudtestdrive/blob/master/ATP/readme.md)

Want to Learn More?

Recommended Reading

- [Autonomous Transaction Processing Made Easy](#) (eBook)

Additional Resources

- Additional Resources: https://cloud.oracle.com/en_US/atp/additional-resources
- Demos and Videos: https://cloud.oracle.com/en_US/atp/videos
- [Oracle Autonomous Transaction Processing Documentation](#)
- Join the Autonomous Transaction Processing [forum](#).
- [Getting Started with Oracle Cloud](#)



Appendix



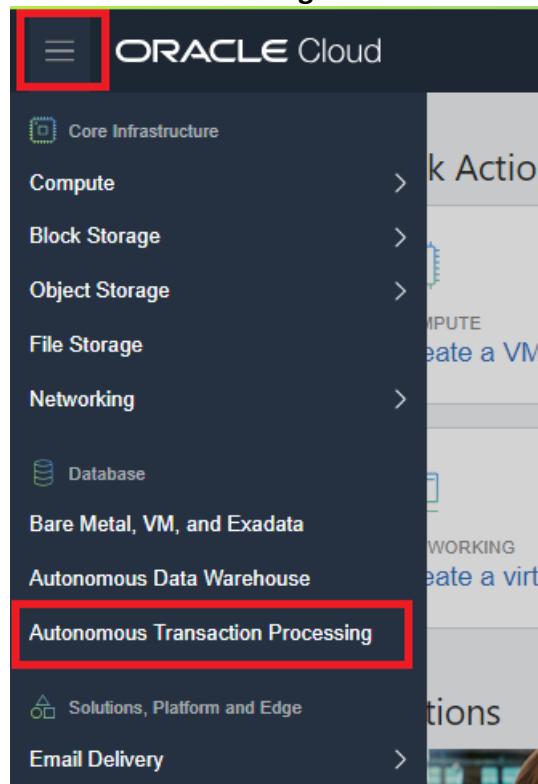
Appendix A – Provisioning Process Walkthrough

This is a walkthrough of the process used to create an ATP instance. This was demonstrated live during your lab session.

Creating your Autonomous Transaction Processing Database

Click on the **MENU** link at the top left of the page.

This will produce a drop-down menu, where you should select “**Autonomous Transaction Processing**”



This will take you to the management console page for ATP in the root compartment of the tenancy. The red warning icon "Forbidden" indicates that the Policies within the tenancy does not allow your user to create ATP Instances in the root compartment.

The screenshot shows the 'Autonomous Databases' page in the Oracle Cloud Infrastructure console. On the left, there's a sidebar with 'List Scope' and 'Filters' sections. The 'List Scope' section has a dropdown menu where 'oractdemeabdmautodb (root)' is selected. Below it is a search bar with placeholder text 'Don't see what you're looking for?'. The 'Filters' section includes dropdowns for 'STATE' (set to 'Any state') and 'WORKLOAD TYPE' (set to 'ATP'). At the bottom of the sidebar, there's a 'Tag Filters' section with a note 'No tag filters applied' and a 'add | clear' button. The main area is titled 'Autonomous Databases in oractdemeabdmautodb (root) Compartment'. It features a table with columns: Name, State, Database Name, CPU Core Count, Storage (TB), Workload Type, and Created. A single row is present, showing a red exclamation mark icon in the 'State' column and the word 'Forbidden' in the 'Workload Type' column. At the bottom right of the table area, there are links 'No Autonomous Databases < Page 1 >'.

To begin the process of creating your ATP instance in this tenancy you need to select a compartment.

Click on the pulldown menu marked **Compartment**. Expand the menu under ATP_Workshop by clicking the ‘+’. Select the compartment that is given by the instructor. It may differ from ATP_Delegate shown below.

The screenshot shows the 'Create Autonomous Database' dialog box. On the left, there's a 'List Scope' section with a 'COMPARTMENT' dropdown set to 'oractdemeabdmautodb (root)'. A red box highlights this dropdown. Below it is a 'Search compartments' input field and a list of compartments. The 'oractdemeabdmautodb (root)' item is selected and highlighted with a blue background, while 'ATP_Workshop' and 'ATP_Delegate' are also highlighted with red boxes. The 'ManagedCompartmentsForPaaS' item is visible at the bottom of the list. To the right of the list, there's a vertical sidebar with a 'Create' button and a 'Name' input field. At the bottom, there's a 'State' dropdown set to 'Any state'.

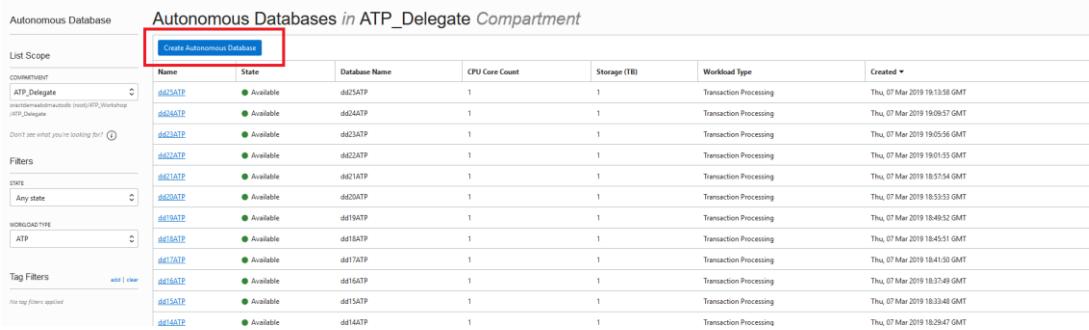
Note – Your list of compartments may be different to the one shown above.

The main page will now change to show the list of ATP instances within your compartment, as shown below:

Oracle Autonomous Transaction Processing Hands-on Lab Guide

Note: this lab uses the same tenancy and compartment for all lab attendees, therefore, it is possible that you may see ATP instances listed on this page which have already been created by other users attending this lab.

To create a new instance, click the blue "Create Autonomous Database" button.



Autonomous Databases in ATP_Delegate Compartment								
		Create Autonomous Database						
List Scope	Compartment	Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
ATP_Delegate	workshopadmin@db01.usc(oracle)ATP_Workshop	dd01ATP	Available	dd01ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:13:58 GMT
	ATP_Delegate	dd02ATP	Available	dd02ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:09:51 GMT
		dd03ATP	Available	dd03ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:05:56 GMT
		dd04ATP	Available	dd04ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:01:55 GMT
		dd05ATP	Available	dd05ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:57:54 GMT
		dd06ATP	Available	dd06ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:53:53 GMT
		dd07ATP	Available	dd07ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:49:52 GMT
		dd08ATP	Available	dd08ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:45:51 GMT
		dd09ATP	Available	dd09ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:41:50 GMT
		dd10ATP	Available	dd10ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:37:49 GMT
		dd11ATP	Available	dd11ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:33:48 GMT
		dd12ATP	Available	dd12ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:29:47 GMT
		dd13ATP	Available	dd13ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:25:46 GMT
		dd14ATP	Available	dd14ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:21:45 GMT

Enter the required information and click the "Create Autonomous Database" button at the bottom of the form. For the purposes of this lab, use the information below:

Workload Type: Autonomous Transaction Processing

Compartment: Verify that the correct compartment is selected. You will not be able to create instances outside this compartment due to Identity Management policies.

Display Name: Enter the display name for your ATP Instance. (Hint- use your username so you can identify your instance more easily)

Database Name: Enter any database name you choose that fits the requirements for ATP. The database name must consist of letters and numbers only, starting with a letter. The maximum length is 14 characters. (Hint- use your username so you can identify your instance more easily)

CPU Count: 1

Storage Capacity (TB): 1

Administrator Password: Enter any password you wish to use noting the specific requirements imposed by ATP. A suggested password for this lab is ATPwelcome-1234

Oracle Autonomous Transaction Processing Hands-on Lab Guide

Create Autonomous Database help cancel

Workload Type

AUTONOMOUS DATA WAREHOUSE

AUTONOMOUS TRANSACTION PROCESSING
Configures the database for a transactional workload, with a bias towards high volumes of random data access.

Database Information

COMPARTMENT: ATP_Delegate

DISPLAY NAME: MELATPTRAIN01

DATABASE NAME: MELATPTRAIN01
The name must contain only letters and numbers, starting with a letter. 14 characters max.

CPU CORE COUNT: 1 STORAGE (TB): 1
The number of CPU cores to enable. Available cores are subject to your tenancy's service limits.
The amount of storage to allocate.

Administrator Credentials

Set the password for your Autonomous Transaction Processing database ADMIN user here.

USERNAME: READ-ONLY
ADMIN

PASSWORD:

CONFIRM PASSWORD:

License Type

MY ORGANIZATION ALREADY OWNS ORACLE DATABASE SOFTWARE LICENSES
Bring my existing database software licenses to the database cloud service ([details](#)).
 SUBSCRIBE TO NEW DATABASE SOFTWARE LICENSES AND THE DATABASE CLOUD SERVICE

TAGS

Tagging is a metadata system that allows you to organize and track resources within your tenancy. Tags are composed of keys and values that can be attached to resources.

[Learn more about tagging](#)

TAG NAMESPACE: None (apply a free-form tag) TAG KEY: VALUE:
+ Additional Tag

Create Autonomous Database

When you enter the administrator password, note the specific requirements imposed by ATP:

Administrator Credentials

Set the password for your Autonomous Transaction Processing database ADMIN user here.

USERNAME: READ-ONLY
ADMIN

PASSWORD:
•

>Password must be 12 to 30 characters and contain at least one uppercase letter, one lowercase letter, and one number. The password cannot contain the double quote ("") character or the username "admin".

CONFIRM PASSWORD:

Oracle Autonomous Transaction Processing Hands-on Lab Guide

When you have completed the required fields, scroll down and click on the blue **Create Autonomous Database** button at the bottom of the form:

The screenshot shows the 'Create Autonomous Database' form. It includes sections for 'TAG NAMESPACE' (None (apply a free-form tag)), 'TAG KEY' (empty), 'TAG VALUE' (empty), and a '+ Additional Tag' button. At the bottom is a large blue 'Create Autonomous Database' button.

The console page will display the message “**Provisioning**” under the “State” column.

Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
MELATPTRAIN01	Provisioning	MELATPTRAIN01	1	1	Transaction Processing	Fri, 08 Mar 2019 08:38:38 GMT
DELEGATEATP	Available	ds21ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:13:58 GMT
DELEGATEATP	Available	ds21ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:09:37 GMT
DELEGATEATP	Available	ds21ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:05:58 GMT
DELEGATEATP	Available	ds22ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:01:55 GMT
DELEGATEATP	Available	ds21ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:57:54 GMT
DELEGATEATP	Available	ds20ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:53:53 GMT
DELEGATEATP	Available	ds19ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:49:52 GMT
DELEGATEATP	Available	ds18ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:45:51 GMT
DELEGATEATP	Available	ds17ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:41:50 GMT
DELEGATEATP	Available	ds16ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:37:49 GMT
DELEGATEATP	Available	ds15ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:33:48 GMT
DELEGATEATP	Available	ds14ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:29:47 GMT

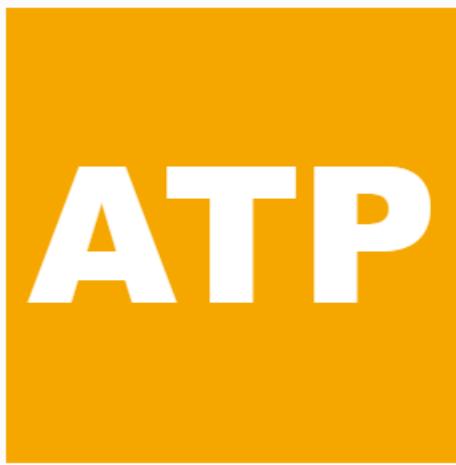
Click on the name of your ATP instance, as shown below

Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
MELATPTRAIN01	Provisioning	MELATPTRAIN01	1	1	Transaction Processing	Fri, 08 Mar 2019 08:38:38 GMT
DELEGATEATP	Available	ds21ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:13:58 GMT
DELEGATEATP	Available	ds21ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:09:37 GMT
DELEGATEATP	Available	ds22ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:01:55 GMT
DELEGATEATP	Available	ds21ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:57:54 GMT
DELEGATEATP	Available	ds20ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:53:53 GMT
DELEGATEATP	Available	ds19ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:49:52 GMT
DELEGATEATP	Available	ds18ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:45:51 GMT
DELEGATEATP	Available	ds17ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:41:50 GMT
DELEGATEATP	Available	ds16ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:37:49 GMT
DELEGATEATP	Available	ds15ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:33:48 GMT
DELEGATEATP	Available	ds14ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:29:47 GMT

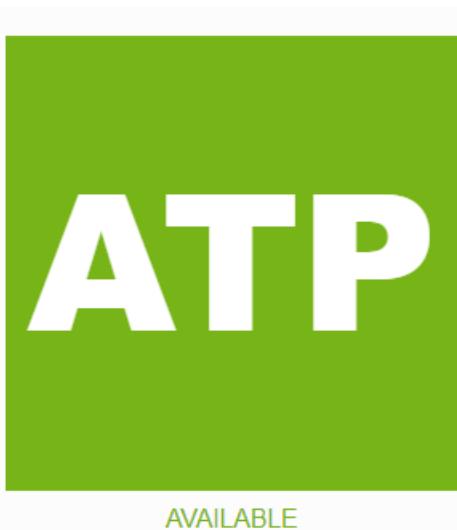
This will display more information about your instance and you should notice the various menu buttons that help you manage your new instance – because the instance is currently being provisioned all the management buttons are grayed out.

The screenshot shows the 'Autonomous Database Details' page for 'MELATPTRAIN01'. The top navigation bar includes 'DB Connection', 'Service Console', 'Scale Up/Down', 'Start', and 'Actions'. The main content area has tabs for 'Autonomous Database Information' (selected) and 'Tags'. Under 'Autonomous Database Information', it shows the database is in 'PROVISIONING' state. Other details include: Workload Type: Transaction Processing; Database Name: MELATPTRAIN01; CPU Core Count: 1; Storage (TB): 1. The 'Actions' section contains buttons for 'Edit', 'Delete', 'Scale Up', 'Scale Down', 'Start', 'Stop', and 'Actions' (dropdown). Below this, the 'Backups' section shows a table with one item: 'Name: MELATPTRAIN01', 'State: Started', 'Type: Automatic', 'Started: Fri, 08 Mar 2019 08:38:38 GMT', and 'Ended: Fri, 08 Mar 2019 08:38:38 GMT'. The 'Resources' section has tabs for 'Backups' (selected) and 'Logs'.

A summary of your instance status is shown in the large box on the left. In this example, the color is amber and the status is **Provisioning**



After a short while the status will change to **Available** and the “ATP” box will change color to green:



Once the Lifecycle Status is **Available**, additional summary information about your instance is populated, including workload type. You can also see the Lifecycle Status reported in this region.

Oracle Autonomous Transaction Processing Hands-on Lab Guide

MELATPTRAIN01

Autonomous Database Information Tags

Workload Type: Transaction Processing

Display Name: MELATPTRAIN01
Database Name: MELATPTRAIN01
CPU Core Count: 1
Storage (TB): 1

Created: Fri, 08 Mar 2019 08:38:38 GMT
Compartments: orclcdmelatptrain01 (root)/ATP_Workshop/ATP_Delegate
OCID: -auTfQ Show Copy
License Type: Bring Your Own License
Lifecycle State: Available

Resources Backups

Backups are automatically created daily.

Create Manual Backup

Name	State	Type	Started	Ended
No items found.				

Showing 0 item(s) < Page 1 >

Congratulations you have created your first ATP instance!

Return to the main page which list all your ATP instances by clicking on the Autonomous Database link at the top of the page:

Autonomous Database » Autonomous Database Details

MELATPTRAIN01

DB Connection Service Console Scale Up/Down

Autonomous Database Information Tags

Workload Type: Transaction Processing
Display Name: MELATPTRAIN01
Database Name: MELATPTRAIN01
CPU Core Count: 1
Storage (TB): 1

Autonomous Database

Autonomous Databases in ATP_Delegate Compartment

Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
MELATPTRAIN01	Available	MELATPTRAIN01	1	1	Transaction Processing	Fri, 08 Mar 2019 08:38:38 GMT
dd21ATP	Available	dd21ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:13:58 GMT
dd24ATP	Available	dd24ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:09:57 GMT
dd23ATP	Available	dd23ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:05:56 GMT
dd22ATP	Available	dd22ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 19:01:55 GMT
dd21ATP	Available	dd21ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:57:54 GMT
dd20ATP	Available	dd20ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:53:53 GMT
dd19ATP	Available	dd19ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:49:52 GMT
dd18ATP	Available	dd18ATP	1	1	Transaction Processing	Thu, 07 Mar 2019 18:45:51 GMT

You are now ready to start Lab 2.

Appendix B – Creating and preparing a user to access Object Storage

Information about how the environment was prepared

To load data from the Oracle Cloud Infrastructure Object Storage you will need a Cloud user with the appropriate privileges to read data from the Object Store. The communication between the database and the object store relies on the Swift protocol and a username/password authentication token.

This is an outline of the steps that your instructor carried out – your lab user does not have permission to do these operations, or to see all of the referenced objects.

Select/Create your object storage bucket.

Buckets *in ATP_Workshop Compartment*

Create Bucket

DEMO_DATA

B

Created: Fri, 21 Dec 2018 11

Upload the files to the object storage bucket.

DEMO_DATA

Change Compartment Update Visibility Delete Apply Tag(s)

Bucket Information Tags

Namespace: oscmeara001

Storage Tier: Standard

ETag: 984a1594-6465-4243-8c8a-3e4dde44353c

Encryption Key: None [Assign](#)

[Developer tools](#) are available for advanced object operations.

Objects

Upload Object Restore Object

ATP-HOL-Long-v0.6.pdf

channels.csv

channels_special.csv

countries.csv

Construct the URL that points to the location of the file staged in the OCI Object Storage. The URL is structured as follows

https://swiftobjectstorage.<region_name>.oraclecloud.com/v1/<tenant_name>/<bucket_name>/<file_name>

Oracle Autonomous Transaction Processing Hands-on Lab Guide

Create a user, in this example, 'atp_oss_access' and associate the user with a group.

atp_oss_access

Description: ATP Workshop shared OSS access account

Create/Reset Password Edit User Capabilities Unblock Delete Apply Tag(s)

User Information Tags

OCID: aps47a Show Copy

Created: Fri, 21 Dec 2018 12:47:52 GMT

Capabilities

Local password: Yes
API keys: Yes
Auth tokens: Yes

Groups

Add User to Group

G ATP_Group OCID: aps47a Show Copy

Create a policy statement to allow the group to read the object storage bucket.

Allow group Atp_group to read buckets in compartment Atp_workshop

Create an Authentication Token (Auth Token) for this user. Make a note of it as you are only told this information once.

atp_oss_access

Description: ATP Workshop shared OSS access account

Create/Reset Password Edit User Capabilities Unblock Delete Apply Tag(s)

User Information Tags

OCID: aps47a Show Copy Created: Fri, 21 Dec 2018 12:47:52 GMT Status: Active Federated: No

Capabilities

Local password: Yes API keys: Yes Auth tokens: Yes SMTP credentials: Yes Customer secret keys: Yes

Auth Tokens

Generate Token AT OCID: xyzzyq Show Copy Description: Token created for ATP workshops

To access data in the Object Store you must enable your database user to authenticate itself with the Object Store using your object store account and Auth Token.

You do this by creating a private CREDENTIAL object for your user that stores this information encrypted in your ATP instance using the DBMS_CLOUD package. This encrypted connection information is only usable by your user schema.

Oracle Autonomous Transaction Processing Hands-on Lab Guide

```
set define off
begin
  DBMS_CLOUD.create_credential(
    credential_name => 'OBJ_STORE_CRED',
    username => 'atp_oss_access',
    password => 's<i[GK}R1:SD+uRA42MG'
  );
end;
/
```

Appendix C – Connecting to the database using Oracle Machine Learning Notebook

You can use the included Oracle Machine Learning OML Notebook based environment to connect to your ATP environment. OML is a browser-based environment, and so provides an easy to connect and fast environment to work with ATP. It can be used to run SQL queries and scripts, which can then be grouped together within a notebook. Notebooks can be used to build single reports, collections of reports and dashboards, and notebooks can be shared with other users.

Creating an OML user

The OML Notebook requires you to create a user, as the ATP instance admin user is prohibited from creating notebooks and jobs.

Return to your Firefox window and open your ATP instance service console.

Select Administration and Manage Oracle ML Users

The screenshot shows the Oracle Autonomous Transaction Processing service console. On the left, there's a sidebar with 'Autonomous Transaction Processing' at the top, followed by 'Overview', 'Activity', and 'Administration'. The 'Administration' button is highlighted with a red box. Below the sidebar, it says 'DATABASE MELATPTTRAIN01'. The main content area has several sections: 'Download Client Credentials (Wallet)', 'Set Resource Management Rules', 'Set Administrator Password', 'Download Oracle Instant Client', and 'Send Feedback to Oracle'. The 'Manage Oracle ML Users' section is highlighted with a blue box. This section contains the text: 'Create new Oracle Machine Learning user accounts and manage the credentials for existing Oracle Machine Learning users.'

You will now see the User management page. Select **Create** to create your new user.

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The screenshot shows the Oracle Machine Learning User Administration interface. At the top, it says 'ORACLE Machine Learning User Administration'. Below that is a header with 'Users' and buttons for '+ Create', 'Delete', and 'Show All Users'. There is also a search bar and a status indicator. The main area is a table with columns: User Name, Full Name, Role, Email, Created On, and Status. One row is shown: 'ADMIN' with 'System Administrator' role, 'melanie.ashworth-march@oracle.com' email, '11/25/18 4:42 PM' created on, and 'Open' status.

Enter the required information and click **Create**. For the purposes of this lab, use the information below:

Username: *omluser1*

Email Address: Enter a valid email address

Uncheck the generate password button. You can optionally have a secure password emailed to the email address and then reset it on first login. As access to your email is not guaranteed, to speed up this lab we are going to manually enter a password.

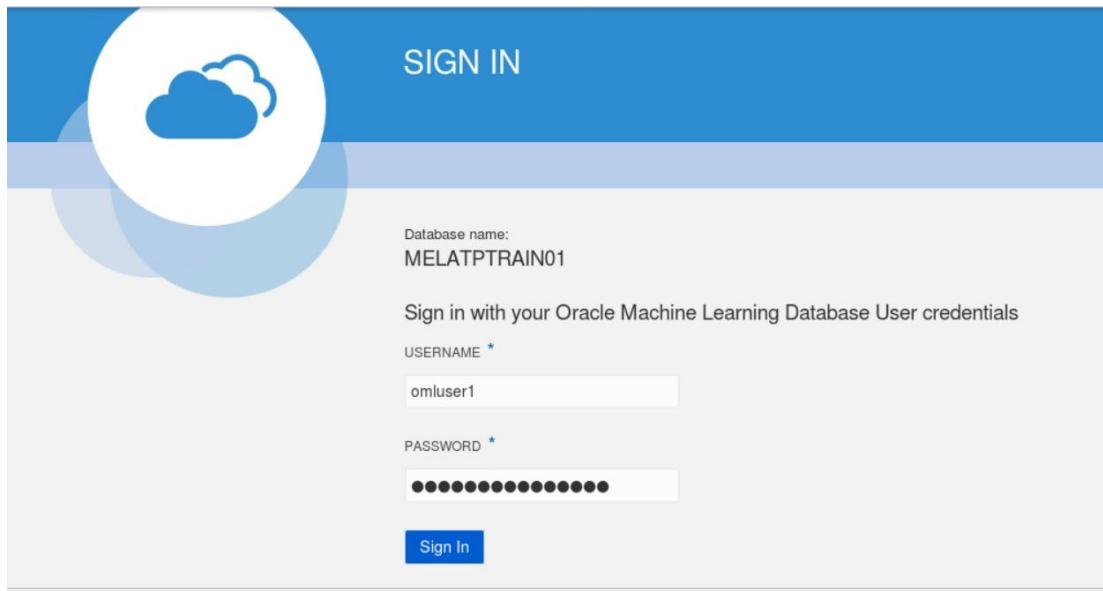
Password: Enter any password you wish to use noting the specific requirements imposed by ATP. A suggested password for this lab is ATPwelcome-1234

The screenshot shows the 'Create User' dialog box. It has fields for Username ('omluser1'), First Name, Last Name, and Email Address ('melanie.ashworth-march@oracle.com'). There is a checkbox for generating a password and account details, which is unchecked. Below that are fields for Password and Confirm Password, both containing 'ATPwelcome-1234'. At the bottom right are 'Create' and 'Cancel' buttons, with 'Create' being highlighted by a red box.

Connect as your new OML user by selecting the Home Icon (shaped like a house) on the Users screen

The screenshot shows the Oracle Machine Learning User Administration interface again. At the top, it says 'User Created'. Below that is a header with 'Users' and buttons for '+ Create', 'Delete', and 'Show All Users'. There is also a search bar and a status indicator. The main area is a table with columns: User Name, Full Name, Role, Email, Created On, and Status. Two rows are shown: 'ADMIN' with 'System Administrator' role, 'melanie.ashworth-march@oracle.com' email, '11/25/18 4:42 PM' created on, and 'Open' status; and 'OMLUSER1' with 'Developer' role, 'melanie.ashworth-march@oracle.com' email, '1/3/19 4:37 PM' created on, and 'Open' status. A red box highlights the home icon in the top right corner of the header.

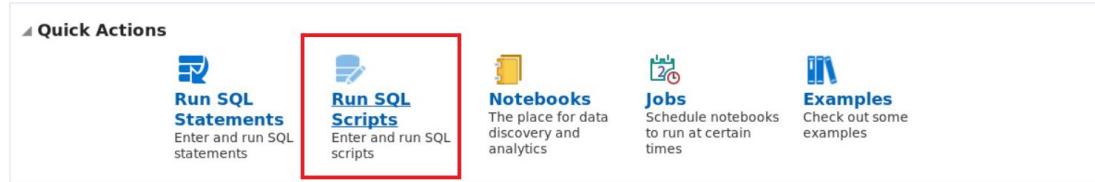
This will open a new browser tab. Sign in as **omluser1**



You are now connected as an OML Notebook user.

Now we will use the OML SQL Scripts function to run the same simple query we ran in SQL Developer.

Select **Run SQL Scripts** to open the SQL Script Scratchpad.



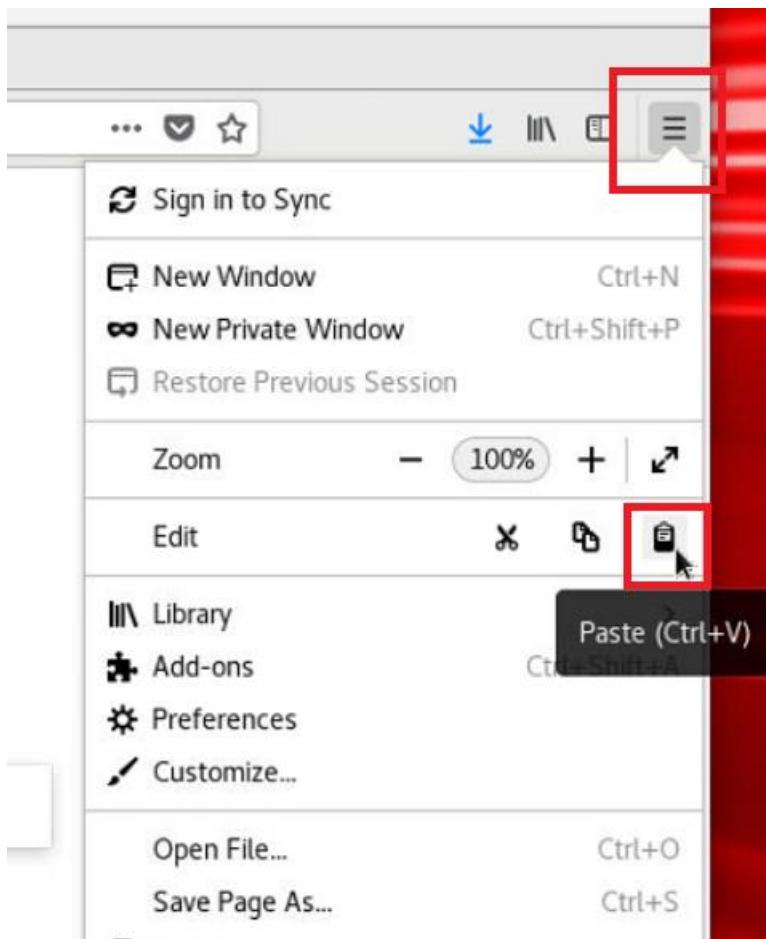
Note: As this is the first time the Notebook Server has been started in this ATP instance, sometimes it will fail to start first time with the message 'Notebook server not available, please try again at a later time' Just try the Run SQL Scripts button again and it should start successfully.

Notebook server not available, please try again at a later time

Copy this SQL statement and paste it in the gray SQL script box.

```
select country_region, count(country_name) from sh.countries group by country_region;
```

If you are having a problem pasting data into Firefox there is a 'Paste' menu item in the Firefox Menu.



Select the **Run all Paragraphs** icon to execute the script.



Select **ok** on the **Run all paragraphs** confirmation screen. The results of the query will be displayed.

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The screenshot shows the Oracle Machine Learning interface. At the top, it says "ORACLE Machine Learning" and "OMLUSER1 Project [OMLUSER1 Work...]" with a "Connected" status. Below that is the "SQL Script Scratchpad" section. It contains a script window with the following SQL query and its results:

```
%script
select country_region, count(country_name) from sh.countries group by country_region;
```

COUNTRY_REGION	COUNT(COUNTRY_NAME)
Asia	5
Middle East	1
Europe	10
Americas	4
Oceania	2
Africa	1

Below the results, it says "6 rows selected." and "Total 4 sec. Last updated by OMLUSER1 at January 04 2019, 1:56:07 PM." To the right of the results, there are "FINISHED" and "READY" buttons. The bottom part of the scratchpad shows an empty script area with a placeholder "%script".

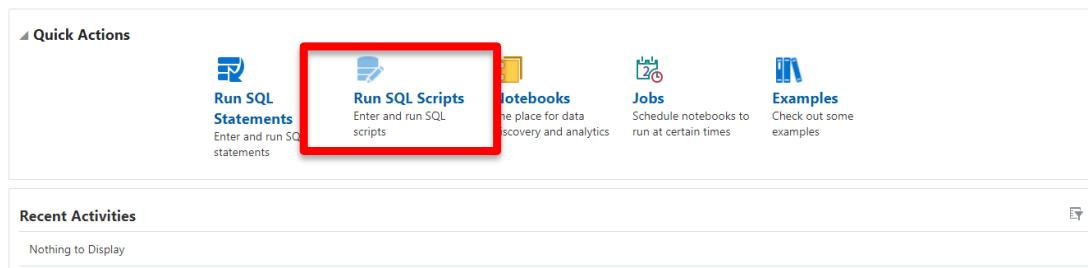
You have successfully connected and run an operation against ATP with Oracle OML.

Selecting the Service in OML

OML makes it easier to do this because Notebooks automatically “see” all services available in the instance. Notebooks also allow re-running the same query multiple times without having to make any changes or re-posting the query.

Your OML session should still be open from the previous section, if not connect to OML as your omluser1 session.

If not already in **Run SQL Scripts**, select it from Quick Actions:



Before running a query, explore the different services that can be used to run the query by selecting the **Interpreter binding** button (next to the **default** drop down button) which is shown below:

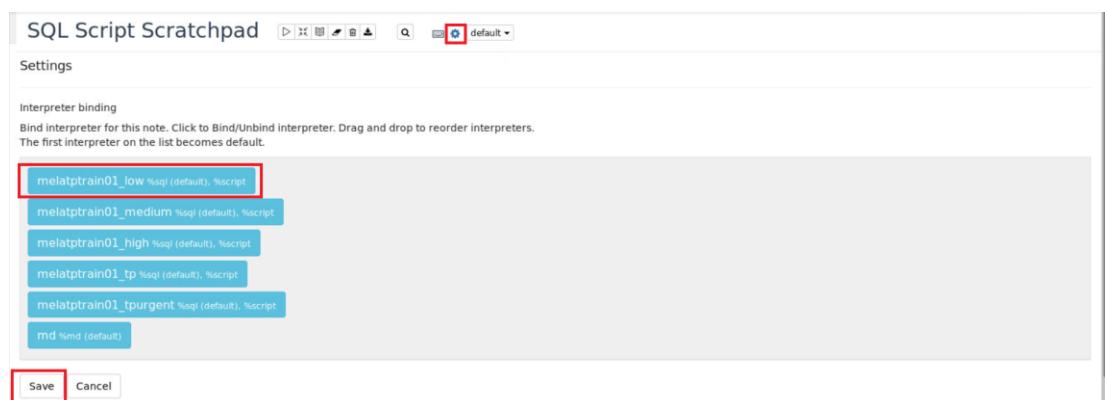


A new pane opens listing all the services available to run queries. You will see the five services already discussed previously and a new one specific to OML (md). The services are selected in list order, with the service at the top of the list being tried first. OML will try to connect to each selected service in order, and will then execute the SQL against the first successfully connected service.

The first time you run a query against a service, OML will establish a database connection. This will be reflected in the total execution time, which could include several additional seconds for the new connection. With a short query this will substantially add to the total execution time.

A blue color indicates the service is selected and will be tried, if you click on any of the services it will turn white, which de-selects it. You can drag and drop any service up or down the list to specify the order in which they will be attempted.

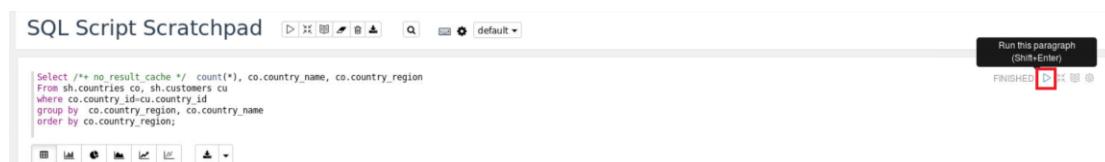
For the first test we will use the **_LOW** service. If it is not at the top of the list, drag and drop it to the top of the list. Select **Save** when done.



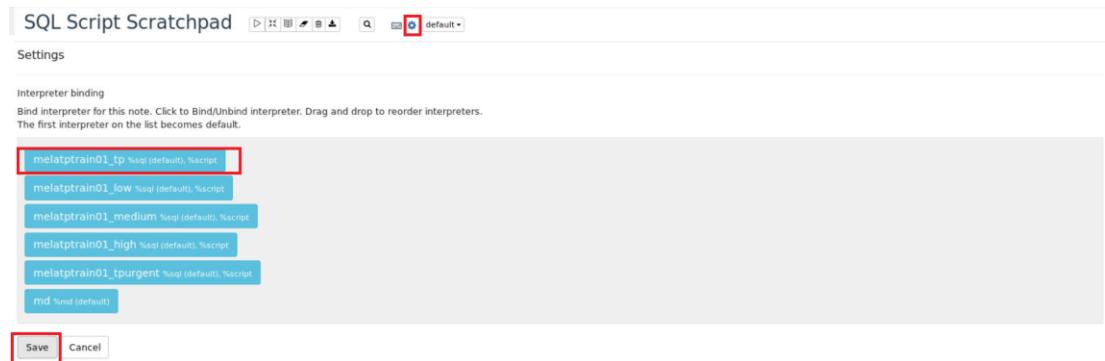
Paste this query into OML. The sql can be found in the file
/home/oracle/labScripts/lab2/lab2_oml_countries.sql

```
Select /*+ no_result_cache */ count(*), co.country_name,
co.country_region
From sh.countries co, sh.customers cu
where co.country_id=cu.country_id
group by co.country_region, co.country_name
order by co.country_region;
```

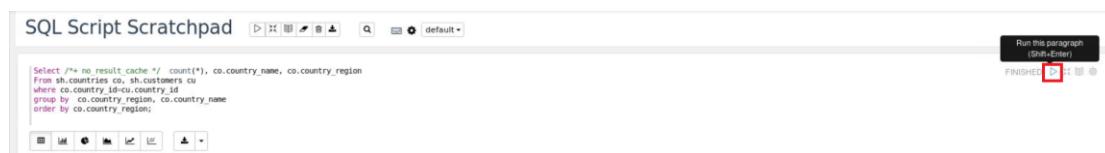
Now run the query by selecting the **Run This Paragraph** button



Now run the query in the **_tp** service. Follow the steps above for changing the service by selecting the **Interpreter binding** button and when the list of services appears drag the **_tp** service to the top and **Save**:



Now run the exact same query as before by selecting the **Run This Paragraph** button. As this is the first connection to the **_tp** service the elapsed run time for this SQL will be slower, and it will include the time taken to make the initial connection.



The number of CPUs assigned to your instance, the other workloads running and the amount of parallelization that your query requires will affect how much impact selecting the different built in services has on your query run time.

Appendix D – Configuring Oracle Cloud Infrastructure for REST

In lab 3 we demonstrate how to use REST and the Oracle provided oci-curl script to control an Autonomous Transaction Processing cloud. To make this lab faster, the environment was pre-configured. This appendix will detail the steps taken to get the environment ready for REST in preparation for Lab 3 in this guide.

For full information on the REST APIs please see the Oracle Infrastructure Cloud Documentation:

<https://docs.cloud.oracle.com/iaas/Content/API/Concepts/usingapi.htm>

Create the keys

To allow REST scripts to be able to communicate with the Oracle cloud, we need to authenticate them to ensure the security of the cloud environment. A REST script uses an already created Oracle cloud user. The REST script can only perform actions that the selected cloud user can perform, these permissions are part of the policies which apply to that user. If a REST script tries to perform an action that the cloud user is not authorized to perform the REST script will fail.

To ensure authentication between the REST script and the cloud user we create an API signing key that the REST script will use to authenticate itself when running. The API signing key uses a RSA key pair in PEM format (minimum 2048 bits).

First create the private key (we are generating it in `~/.oci`):

```
$ openssl genrsa -out ~/.oci/oci_api_key.pem 2048
```

- We can then create the public key from it:

```
$ openssl rsa -pubout -in ~/.oci/oci_api_key.pem -out  
~/.oci/oci_api_key_public.pem
```

Uploading the Key to Oracle Cloud Infrastructure

Once the key is generated we need to upload the public key to the Oracle cloud user that we will use. In this example we will use the user `atpworkshop01`.

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The screenshot shows the Oracle Cloud interface for managing Autonomous Databases. On the left, there's a sidebar with 'Autonomous Database' and 'List Scope' sections. Under 'List Scope', the compartment 'ATP_Delegate' is selected. Below it, a note says 'Don't see what you're looking for?'. The main area displays two Autonomous Databases: 'MELATPTRAIN1' and 'RESTADB1', both listed as 'Available'. The table columns include Name, State, Database Name, CPU Core Count, Storage (TB), Workload Type, and Last Modified Date. A message at the bottom indicates 'Displaying 2 Autonomous Databases'.

Select the API keys from the left-hand menu, and then “Add Public Key”

This screenshot shows the Oracle Cloud Identity interface for managing users. The user 'ATPworkshop01' is selected. In the left sidebar, the 'API Keys' tab is highlighted with a red box. The main area shows a summary of the user's status (Active) and various configuration options like 'Create/Reset Password', 'Edit User Capabilities', and 'Delete'. The 'User Information' tab is active. The 'API Keys' section shows a message 'There are no API Keys for this User.' and a prominent blue 'Add Public Key' button.

This screenshot shows the 'Add Public Key' dialog box. It contains a note about the required PEM format and a large text input field where a long public key string is pasted. The dialog has 'help' and 'cancel' buttons at the top right. The background shows the 'User Details' page for 'ATPworkshop01'.

In the pop-up window, copy and paste the contents of the public key file you generated. Press “Add” in the window when completed.

The key is added to the user and the fingerprint is displayed in the console. Each user can have up to three API keys.

The screenshot shows the Oracle Cloud Infrastructure (OCI) console interface. On the left, there's a sidebar with 'Resources' and a list of items: 'API Keys (1)', 'Auth Tokens (1)', 'SMTP Credentials (0)', 'Customer Secret Keys (0)', and 'Groups'. The main area is titled 'API Keys' and contains a table with one row. The table has columns for 'PK' (with a green circular icon), 'Fingerprint' (containing the value '61:85:ae:a6:03:3b:8e:da:27:76:6e:24:03:1fa5:f9'), and 'Time Created' (showing 'Thu, 30 May 2019 13:06:31 GMT'). A red box highlights the 'Fingerprint' field. At the top right of the table, it says 'Displaying 1 API Keys'. There are also three dots at the bottom right of the table.

Download and customize the script

This lab uses the oci-curl script provided in the Oracle documentation.

<https://docs.cloud.oracle.com/iaas/Content/API/Concepts/signingrequests.htm>

Examples are also given in:

- PowerShell
- C#
- Java
- NodeJS
- Perl
- PHP
- Python
- Ruby
- Go

These scripts make it easier to start working with REST. Before you can use the downloaded script, you must edit it to add information about your environment.

At the time of writing the oci-curl script is on version 1.0.2. Towards the top of the file you will see a comment #TODO

```
# TODO: update these values to your own
Local tenancyId=<Your tenancy OCID>;
Local authUserId=<Your user OCID> ;
local keyFingerprint=<API Key fingerprint>;
local privateKeyPath=<location of private key file>;
```

You need to populate these four variables with details from your environment.

To populate the 'tenancyId' you need to locate your Tenancy OCID. This can be found by selecting the region menu and selecting "**Manage Regions**"

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The screenshot shows the Oracle Cloud Identity interface. In the top right corner, there is a dropdown menu set to 'eu-frankfurt-1'. Below it, a sidebar lists various regions: eu-frankfurt-1 (selected), us-ashburn-1, ap-seoul-1, uk-london-1, ap-tokyo-1, us-phoenix-1, and ca-toronto-1. A 'Manage Regions' button is also present. The main content area displays a user named 'ATPworkshop01' with a green profile picture containing a white 'A'. The user's description is 'ATP Workshop user account - ATPworkshop01'. Below the description are several buttons: Create/Reset Password, Enable Multi-Factor Authentication, Edit User Capabilities, Unblock, Delete, and Apply Tag(s). The 'User Information' tab is selected, showing the OCID as '...lomtq' with options to Show or Copy. The status is listed as 'Active'. A 'Tags' tab is also visible.

Which takes you to the information page about your tenancy. Copy the Tenancy OCID from this page.

The screenshot shows the Oracle Cloud Identity interface. The top navigation bar shows 'eu-frankfurt-1'. The main content area displays a tenancy named 'oscemea001' with a green profile picture containing a white 'T'. The tenancy's description is 'oscemea001'. Below the description are two tabs: 'Tenancy Information' (selected) and 'Tags'. The 'Tenancy Information' section shows the OCID as '...u5mb5q' with options to Show or Copy. It also shows the Home Region as 'eu-frankfurt-1' and the Audit Retention Period message. The 'Object Storage Settings' section includes Amazon S3 Compatibility API Designated Compartment and SWIFT API Designated Compartment status, and the Object Storage Namespace is listed as 'oscemea001'.

To populate the 'authUserId' and 'keyFingerprint', return to the '**User Details**' page for the user where you configured the public key earlier in this appendix. Copy both the user OCID and fingerprint.

The screenshot shows the Oracle Cloud Identity interface. The top navigation bar shows 'eu-frankfurt-1'. The main content area displays a user named 'ATPworkshop01' with a green profile picture containing a white 'A'. The user's description is 'ATP Workshop user account - ATPworkshop01'. Below the description are several buttons: Create/Reset Password, Enable Multi-Factor Authentication, Edit User Capabilities, Unblock, Delete, and Apply Tag(s). The 'User Information' tab is selected, showing the OCID as '...lomtq' with options to Show or Copy. Other details shown include 'Created: Tue, 28 May 2019 17:14:51 GMT', 'Multi-factor authentication: Disabled', and an 'Email' field. The 'Status' is 'Active' and 'Federated' is 'No'. The 'Capabilities' section includes Local password (Yes), API keys (Yes), and Auth tokens (Yes). The 'Resources' section shows 'API Keys (1)', 'Auth Tokens (1)', 'SMTP Credentials (0)', and 'Customer Secret Keys (0)'. The 'API Keys' section displays one key with a green profile picture containing a white 'PK'. The 'Fingerprint' is listed as '61:85:ae:a603:3b:8e:da:27:76:6e:24:03:1fa:5:f9' and the 'Time Created' is 'Thu, 30 May 2019 13:06:31 GMT'. A 'Displaying 1 API Keys' message is also present.

The final piece of information is the path and name of the private key file. Once this has been saved you are ready to use the bash oci-curl script to run REST commands.



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