



Update: Dec 12, 2017

## Introduction

While the Oracle Cloud has greatly simplified DBA tasks, the DBA still has a role to play in the development and maintenance of DBCA instances. This lab covers a few of the common DBA activities in a cloud environment.

This lab supports the following use cases:

- Rapid creation and scaling of cloud databases.
- Maintenance of security access.

## Objectives

- Create an instance.
- Maintain security access.
- Scale up an instance.
- Add a SSH Key.

## Required Artifacts

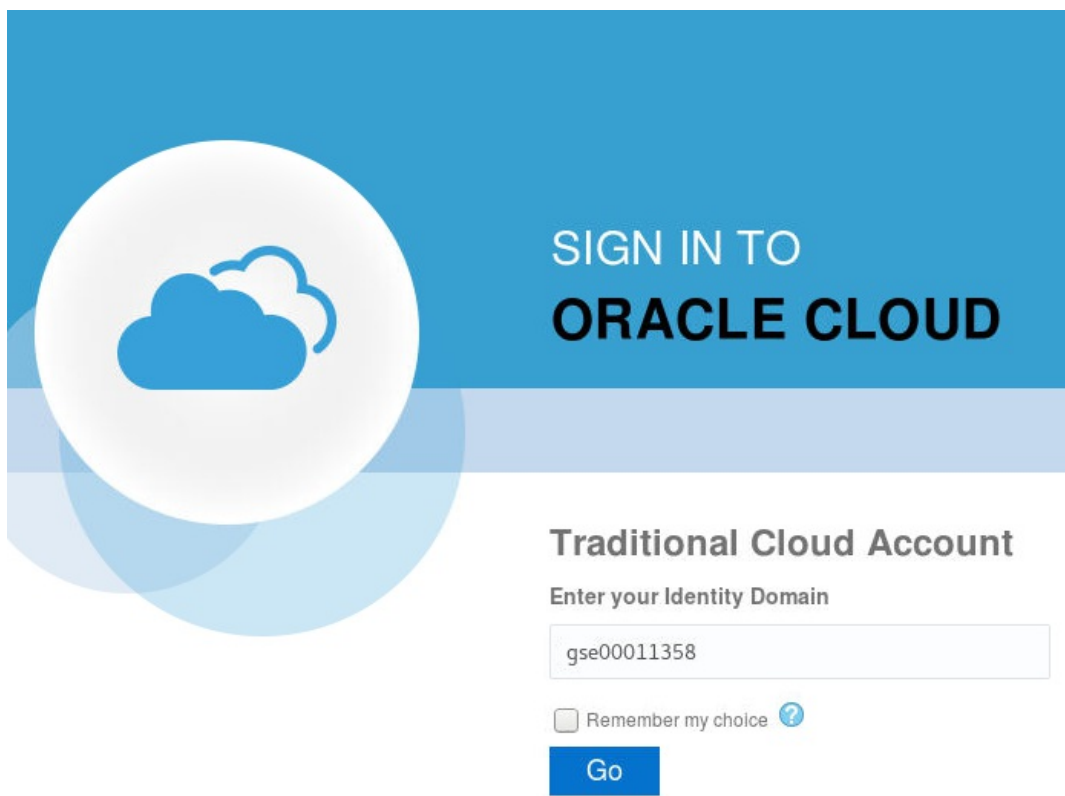
- The following lab does not require set up or artifacts from the previous labs.

# Create an instance

In lab 100 we created an instance from a cloud backup of an on-premise instance. To create an instance from scratch the process is very similar. We will not actually create the instance, but will walk through the screens but cancel before the final step.

**STEP 1:** Log into the Oracle Cloud Console and select the database service (same as lab 100)

- Open Firefox on the compute image desktop and log into the Oracle Cloud

The image shows the Oracle Cloud sign-in interface. It features a blue header with a white circle containing a blue cloud icon on the left. To the right of the icon, the text "SIGN IN TO ORACLE CLOUD" is displayed in white. Below the header, the section "Traditional Cloud Account" is shown. Underneath this, the prompt "Enter your Identity Domain" is followed by a text input field containing the value "gse00011358". Below the input field is a checkbox labeled "Remember my choice" with a blue question mark icon to its right. At the bottom of the form is a blue button with the text "Go" in white.

SIGN IN TO  
**ORACLE CLOUD**

**Traditional Cloud Account**  
Enter your Identity Domain

gse00011358

☐ Remember my choice ?

Go

# Traditional Cloud Account

Welcome gse00011358 [change domain](#) [?](#)

[Can't access your account?](#)

[Sign In](#)

- You should end up on the Database service. If not select the Dashboard link (upper right) and then Database (see below).

The screenshot shows the Oracle Cloud My Services dashboard. At the top, there's a navigation bar with the Oracle logo, 'CLOUD My Services', and links for 'Dashboard', 'Users', and 'Notifications'. The user 'cloud.admin' is logged in. Below the navigation bar, there's a section for 'Oracle Database Cloud Service' with tabs for 'Services', 'Activity', and 'SSH Access'. A 'Welcome! | REST APIs' message is visible. The main content area shows a summary of resources: 1 Service, 1 OCPUs, 7.5 GB Memory, 185 GB Storage, and 1 Public IP. Below this, there's a 'Services' section with a search bar and a 'Create Service' button. A table lists the services, with the first entry being 'Alpha01A-DBCS' with version 12.2.0.1, Enterprise Edition, created on Nov 28, 2017 9:32:08 PM UTC, with 1 OCPUs, 7.5 GB Memory, and 185 GB Storage.

Summary	1	1	7.5 GB	185 GB	1
	Services	OCPUs	Memory	Storage	Public IPs
As of Dec 12, 2017 6:56:47 PM UTC					
<b>Services</b>					
Search by service name <input type="text"/>					
<a href="#">Create Service</a>					
	Alpha01A-DBCS				
	Version:	12.2.0.1	Created On:	Nov 28, 2017 9:32:08 PM UTC	OCPUs: 1
	Edition:	Enterprise Edition			Memory: 7.5 GB
					Storage: 185 GB

- You may also land here if not on the database service (depending on what screens you had been in previously). Then select database.

gse00011358 (traditional) Dashboard Users Notifications

ORACLE CLOUD My Services

Dashboard Cloud Account gse00011358 (traditional)

You have access to new services not currently displayed on your Dashboard. Click on Customize Dashboard to view the list of all services you have access to, and to update your shown services.

Guided Journey Explore what you can do with Oracle Cloud services

Create Instance Provision a new service in minutes

Account Management Administer and manage your account and orders

Customize Dashboard Specify which services appear on the dashboard

Cloud Services

0 Important Notifications

13,744,445 of 500 Standard G...

2 of 5 Compute Classic EIPs Remaining

210 of 500 Compute Classic BLOCK\_S... Remaining

3 of 6 Compute Classic OCPU\_GP Remaining

Database Subscription ID: 566548179

No data to display

EE OCPU Hours...

Compute Classic Subscription ID: 566548833

No data to display

EE HP OCPU Hours...

ORACLE CLOUD My Services Dashboard Users Notifications

Service: Oracle Database Cloud Service Open Service Console

Overview Billing Metrics Monitoring Metrics Documents

Overview Information

Category Oracle Database Public Cloud Services

Data Region US Commercial 2 (Time zone: US/Central)

Identity Domain Name gse00011358

Identity Domain Id gse00011358

Subscription Trial (Expires: 13 March 2019, 7:51 AM PDT)

## STEP 2: Create Service

- Select Create Service

Oracle Database Cloud Service

Services Activity SSH Access

Welcome! | REST APIs

As of Dec 12, 2017 7:03:57 PM UTC

**Summary**

1	1	7.5 GB	185 GB	1
Services	OCPUs	Memory	Storage	Public IPs

**Services**

Search by service name

**Alpha01A-DBCS**

Version: 12.2.0.1  
Edition: Enterprise Edition

Created On: Nov 28, 2017 9:32:08 PM UTC

OCPUs: 1  
Memory: 7.5 GB  
Storage: 185 GB

Create Service

- Enter the fields noted below. Feel free to explore the various options in the drop down lists. Hit Next.

Oracle Database Cloud Service

Create Service

Cancel

Service Details Confirm

Next

**Service**

Provide basic service instance information.

* Service Name	SampleDBCS	?	* Service Level	Oracle Database Cloud Service	?
Description		?	* Metering Frequency	Monthly	?
Notification Email	user@example.com	?	* Software Release	Oracle Database 12c Release 1	?
			* Software Edition	Enterprise Edition	?
			* Database Type	Single Instance	?

- Very few fields are mandatory (highlighted in red) - just the sys password and the ssh public key. Also note that if you are planning on using this instance for GoldenGate you can select this option. Also recall that in lab 100 we created a new instance from a backup. We are not doing that here. This is simply a review step. We will not go further.

[< Previous](#)
[Cancel](#)

Service
Details
Confirm

[Next >](#)

### Service Details

Provide details for this Oracle Database Cloud Service instance.

[Selection Summary](#)

#### Database Configuration

\* DB Name

\* PDB Name

\* Administration Password

\* Confirm Password

\* Usable Database Storage (GB)

Total Data File Storage (GB)

\* Compute Shape

\* SSH Public Key

[Edit](#)

#### Backup and Recovery Configuration

\* Backup Destination

\* Cloud Storage Container

\* Username

\* Password

Create Cloud Storage Container ☐

Total Estimated Monthly Storage (GB)

#### Advanced Settings

\* Listener Port

\* Timezone

\* Character Set

\* National Character Set

Enable Oracle GoldenGate ☐

Include "Demos" PDB ☐

#### Initialize Data From Backup

\* Create Instance from Existing Backup

## Maintain Security Access

Once you have a running database you may wish to open (or close) various ports. We will create a new rule to open 1522 (not used..this is just an example).

### STEP 3: Create Security Rule

- To the right of the Database Service select the hamburger menu and then 'Access Rules'.

Summary

1	1	7.5 GB	185 GB	1
Services	OCPUs	Memory	Storage	Public IPs

Services

Search by service name

Create Service

Alpha01A-DBCS

Version: 12.2.0.1

Edition: Enterprise Edition

Created On: Nov 28, 2017 9:32:08 PM UTC

Open DBaaS Monitor Console

Open Application Express Console

Open EM Console

Start

Stop

Restart

Access Rules

SSH Access

Delete

Service Create and Delete History

- Note port 1521 is closed by default. That is why we are using tunnels. However you can open this port (not advised). Select Create Rule.

Oracle Database Cloud Service / Alpha01A-DBCS / Access Rules

Create Rule

Access Rules

You can use access rules to control network access to service components. On this page, you can manage your access rules.

Results per page: 10

9 result(s) as of Dec 12, 2017 7:46:12 PM UTC

Status	Rule Name	Source	Destination	Ports	Protocol	Description	Rule Type	Actions
🔍	ora_p2_ssh	PUBLIC-INTERNET	DB	22	TCP		DEFAULT	⋮
🔍	ora_p2_http	PUBLIC-INTERNET	DB	80	TCP		DEFAULT	⋮
🔍	ora_p2_https	PUBLIC-INTERNET	DB	443	TCP		DEFAULT	⋮
🔍	ora_p2_httpadmin	PUBLIC-INTERNET	DB	4848	TCP		DEFAULT	⋮
🔍	ora_p2_dbconsole	PUBLIC-INTERNET	DB	1158	TCP		DEFAULT	⋮
🔍	ora_p2_dbexpress	PUBLIC-INTERNET	DB	5500	TCP		DEFAULT	⋮
🔍	ora_p2_dblistener	PUBLIC-INTERNET	DB	1521	TCP		DEFAULT	⋮
🔍	sys_infra2db_ssh	PAAS-INFRA	DB	22	TCP	DO NOT MODIFY: Permit P...	SYSTEM	⋮
🔍	ora_trusted_hosts_db...	127.0.0.1/32	DB	1521	TCP	DO NOT MODIFY: A secur...	SYSTEM	⋮

- Create Rule. Enter the following fields:
  - Rule Name:** Open-1522
  - Source:** PUBLIC-INTERNET -- this is the 'from' part of network access
  - Destination:** DB This is the security list (DB is a default one) that get attached to your instance. You can add others.
  - Destination Port:** 1522



- **Protocol:** TCP

**Create Access Rule**

\* Rule Name:  ?

Description:

\* Source:  ?

\* Destination:  ?

\* Destination Port(s):  ?

\* Protocol:  ?

! This operation may take some time.

[Create](#) [Cancel](#)

- Initially the rule will not show while it is getting created.

! Creation of [Open-1522] access rule(s) is in progress.

**Access Rules** [Create Rule](#)

You can use access rules to control network access to service components. On this page, you can manage your access rules.

Results per page:  9 result(s) as of Dec 12, 2017 7:59:29 PM UTC

Status	Rule Name	Source	Destination	Ports	Protocol	Description	Rule Type	Actions
	ora_p2_ssh	PUBLIC-INTERNET	DB	22	TCP		DEFAULT	
	ora_p2_http	PUBLIC-INTERNET	DB	80	TCP		DEFAULT	
	ora_p2_https	PUBLIC-INTERNET	DB	443	TCP		DEFAULT	
	ora_p2_httpadmin	PUBLIC-INTERNET	DB	4848	TCP		DEFAULT	
	ora_p2_dbconsole	PUBLIC-INTERNET	DB	1158	TCP		DEFAULT	
	ora_p2_dbexpress	PUBLIC-INTERNET	DB	5500	TCP		DEFAULT	
	ora_p2_dblistener	PUBLIC-INTERNET	DB	1521	TCP		DEFAULT	
	sys_infra2db_ssh	PAAS-INFRA	DB	22	TCP	DO NOT MODIFY: Permit P...	SYSTEM	
	ora_trusted_hosts_dbl...	127.0.0.1/32	DB	1521	TCP	DO NOT MODIFY: A secur...	SYSTEM	

- After a minute or two refresh your browser, select access rules, and you should see the new rule enabled. You can also select the hamburger menu on the right and disable the rule.



## Access Rules

You can use access rules to control network access to service components. On this page, you can manage your access rules.

[Create Rule](#)

Results per page: 10

10 result(s) as of Dec 12, 2017 8:01:45 PM UTC

Status	Rule Name	Source	Destination	Ports	Protocol	Description	Rule Type	Actions
	ora_p2_ssh	PUBLIC-INTERNET	DB	22	TCP		DEFAULT	
	ora_p2_http	PUBLIC-INTERNET	DB	80	TCP		DEFAULT	
	ora_p2_https	PUBLIC-INTERNET	DB	443	TCP		DEFAULT	
	ora_p2_httpadmin	PUBLIC-INTERNET	DB	4848	TCP		DEFAULT	
	ora_p2_dbconsole	PUBLIC-INTERNET	DB	1158	TCP		DEFAULT	
	ora_p2_dbexpress	PUBLIC-INTERNET	DB	5500	TCP		DEFAULT	
	ora_p2_dblistener	PUBLIC-INTERNET	DB	1521	TCP		DEFAULT	
	sys_infra2db_ssh	PAAS-INFRA	DB	22	TCP	DO NOT MODIFY: Permit P...	SYSTEM	
	ora_trusted_hosts_dbl...	127.0.0.1/32	DB	1521	TCP	DO NOT MODIFY: A securle...	SYSTEM	
	Open-1522	PUBLIC-INTERNET	DB	1522	TCP		USER	

[Enable](#)  
[Disable](#)  
[Delete](#)

# Scale Up an Instance

Databases typically grow and require additional storage and possibly compute resources. This shows the elastic nature of the Oracle Cloud.

## STEP 4: Scale Up An Instance

- Navigate back to the Alpha01A-DBCS Service (either through the breadcrumbs or the top Dashboard).

[Oracle Database Cloud Service](#) / [Alpha01A-DBCS](#) / [Access Rules](#)

### Access Rules

You can use access rules to control network access to service components. On this page, you can manage your access rules.

Results per page: 10

10 result(s) as of Dec 12, 2017 8:01:45 PM UTC

Status	Rule Name	Source	Destination	Ports	Protocol	Description	Rule Type	Actions
	ora_p2_ssh	PUBLIC-INTERNET	DB	22	TCP		DEFAULT	
	ora_p2_http	PUBLIC-INTERNET	DB	80	TCP		DEFAULT	
	ora_p2_https	PUBLIC-INTERNET	DB	443	TCP		DEFAULT	
	ora_p2_httpadmin	PUBLIC-INTERNET	DB	4848	TCP		DEFAULT	
	ora_p2_dbconsole	PUBLIC-INTERNET	DB	1158	TCP		DEFAULT	
	ora_p2_dbexpress	PUBLIC-INTERNET	DB	5500	TCP		DEFAULT	
	ora_p2_dblistener	PUBLIC-INTERNET	DB	1521	TCP		DEFAULT	
	sys_infra2db_ssh	PAAS-INFRA	DB	22	TCP	DO NOT MODIFY: Permit P...	SYSTEM	
	ora_trusted_hosts_dbl...	127.0.0.1/32	DB	1521	TCP	DO NOT MODIFY: A securle...	SYSTEM	
	Open-1522	PUBLIC-INTERNET	DB	1522	TCP		USER	

- Select the Alpha01A-DBCS Instance

Oracle Database Cloud Service

Services Activity SSH Access Welcome! | REST APIs

As of Dec 12, 2017 10:28:42 PM UTC

Summary

1	1	7.5 GB	185 GB	1
Services	OCPUs	Memory	Storage	Public IPs

Services

Search by service name

Create Service

Alpha01A-DBCS

Version: 12.2.0.1

Edition: Enterprise Edition

Created On: Nov 28, 2017 9:32:08 PM UTC

OCPUs: 1

Memory: 7.5 GB

Storage: 185 GB

- On the hamburger menu on the right select Scale Up/Down.

Overview

1 Node

Administration

1 Patches available

0 Snapshots available

Service Overview

As of Dec 12, 2017 10:31:15 PM UTC

1	1	7.5 GB	185 GB
Nodes	OCPUs	Memory	Storage

Status: Ready

Version: 12.2.0.1

Connect String: Alpha01A-DBCS:1521/PDB1.g...

Edition: Enterprise Edition

Backup Destination: Both Cloud Storage and...

Cloud Storage Container: https://storage.us2.orac...

PDB Name: PDB1

Container Name: ORCL

Show more...

Resources

Host Name: Alpha01A-DBCS

Public IP: 129.157.187.248

SID: ORCL

OCPUs: Start

Memory: Stop

Storage: Restart

Scale Up/Down

- We can scale the Compute Shape (CPU) and/or the storage. We will add storage in this case.

**Scale Up/Down Service** ✕

Alpha01A-DBCS is currently using compute shape OC3. Specify new shape and/or additional storage for the service.  
Note that the service will be unavailable during scale up/down operation.

New Compute Shape

Additional Storage (GB)

Add Storage to

**Scale Up/Down Service** ✕


Alpha01A-DBCS is currently using compute shape OC3. Specify new shape and/or additional storage for the service.  
Note that the service will be unavailable during scale up/down operation.

New Compute Shape

Additional Storage (GB)

Add Storage to

- Refresh the screen - you should see the storage change from 185 GB to 210 GB.

 **Oracle Database Cloud Service / Alpha01A-DBCS** ☰ 🔍 🔧 📄

**Overview**

1 Node  
Last scale up/down succeeded

**Administration**

1 Patches available

0 Snapshots available

**Service Overview** As of Dec 12, 2017 11:00:06 PM UTC

1 Nodes	1 OCPU	7.5 GB Memory	210 GB Storage
------------	-----------	------------------	-------------------

Status: Ready      Version: 12.2.0.1

Connect String: Alpha01A-DBCS:1521/PDB1.g...      Edition: Enterprise Edition

Backup Destination: Both Cloud Storage and...      Cloud Storage Container: https://storage.us2.oracle...

PDB Name: PDB1      Container Name: ORCL

[Show more...](#)

**Resources**

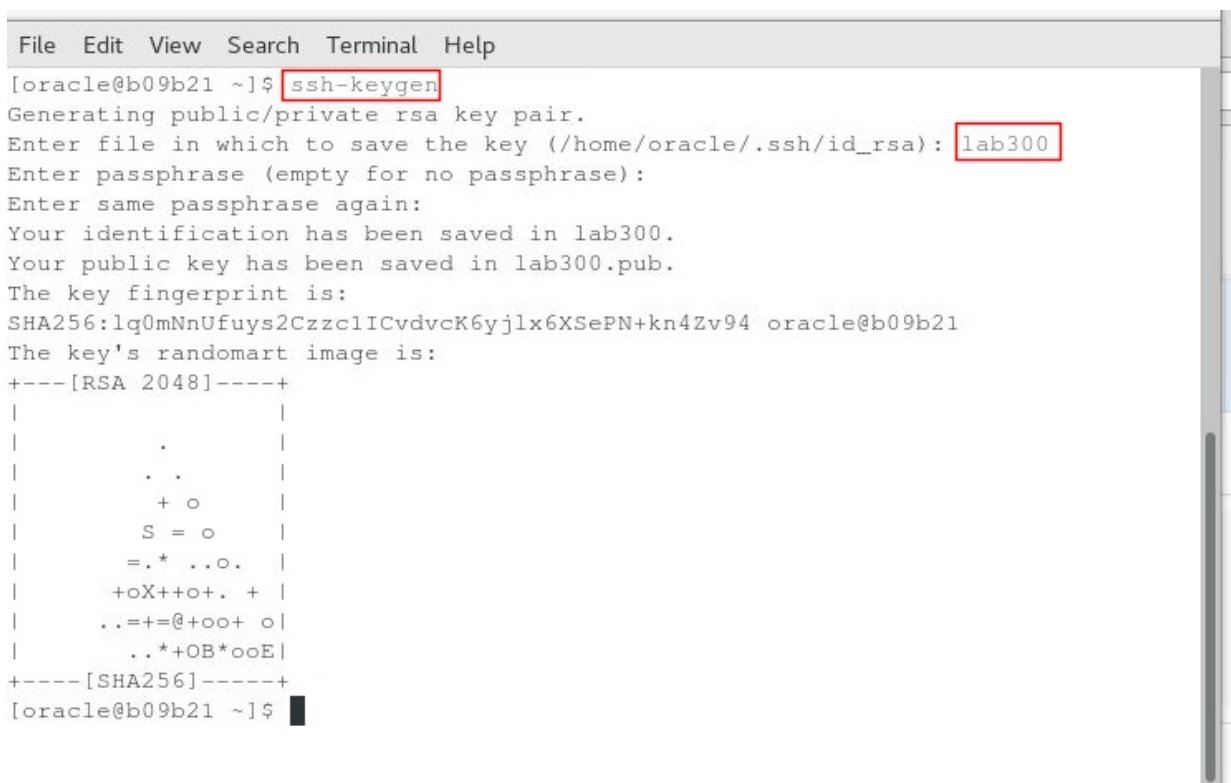
Host Name: Alpha01A-DBCS	OCPU: 1
Public IP: 129.157.187.248	Memory: 7.5 GB
SID: ORCL	Storage: 210 GB

# Add SSH Key

SSHs are required when creating a new DBCS instance. Later you can add additional keys (eg: if you lost your existing private key) through the database console.

## STEP 5: Generate New Key Pair

- Navigate to the compute desktop and open a new terminal window. Enter the following.
  - **ssh-keygen**
  - **Enter filename: lab300**
  - **Then hit enter twice for no password**



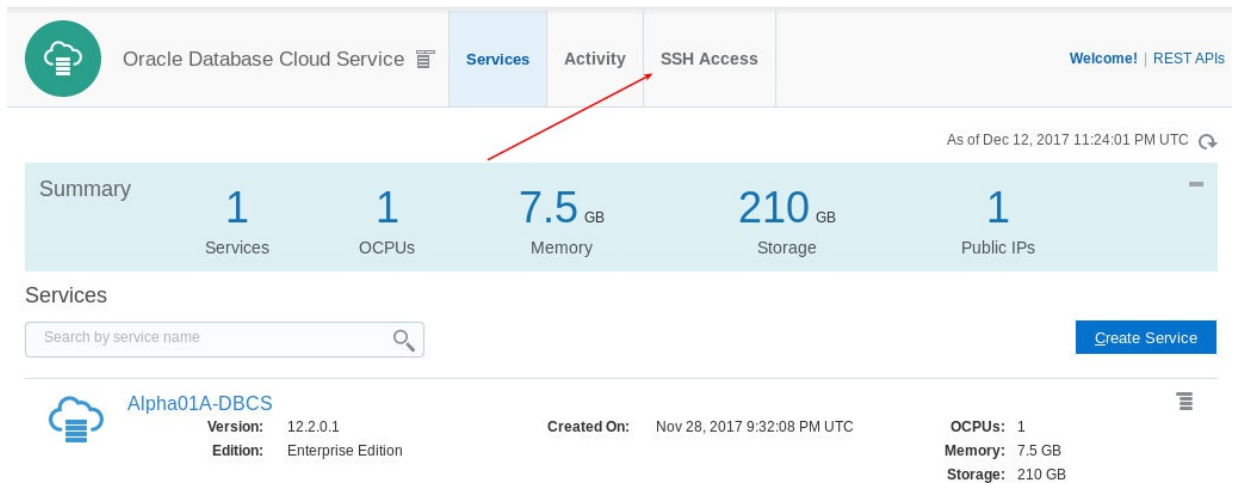
```
File Edit View Search Terminal Help
[oracle@b09b21 ~]$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/oracle/.ssh/id_rsa): lab300
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in lab300.
Your public key has been saved in lab300.pub.
The key fingerprint is:
SHA256:1q0mNnUfuys2Czzc1ICvdvcK6yjlX6XSePN+kn4Zv94 oracle@b09b21
The key's randomart image is:
+---[RSA 2048]---+
|
|      .
|      . .
|      + o
|      S = o
|      =.* ..o.
|      +oX++o+. +
|      ..+=@+oo+ o
|      ..*+OB*ooE|
+---[SHA256]-----+
[oracle@b09b21 ~]$
```

- Change private key permissions. Enter the following.
  - **ls --** review files - see the new public and private keys.
  - **chmod 600 lab300**

```
+-----[SHA256]-----+
[oracle@b09b21 ~]$ ls
datamodeler.log Documents key Music Pictures ssh.out
dbenv.sh Downloads lab300 OPCWworkshop_bu Public Templates
Desktop ibkup lab300.pub oradiag_oracle ssh.err Videos
[oracle@b09b21 ~]$ chmod 600 lab300
[oracle@b09b21 ~]$
```

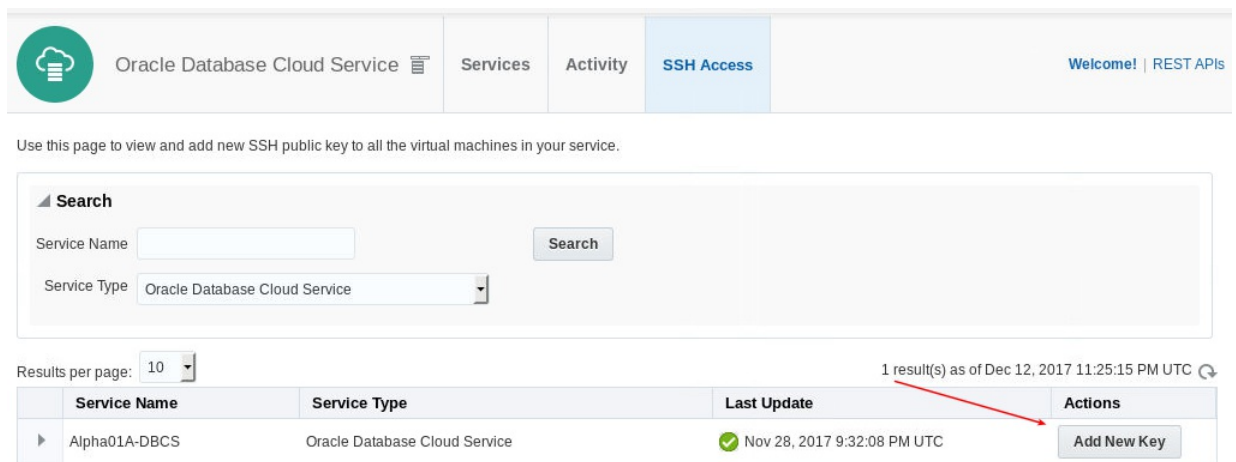
## STEP 6: Add SSH Key

- Navigate to the DBCS Service page and select SSH Access.



The screenshot shows the Oracle Database Cloud Service console. The top navigation bar includes 'Services', 'Activity', and 'SSH Access'. A red arrow points to the 'SSH Access' tab. Below the navigation bar, a summary card displays service details: 1 Service, 1 OCPUs, 7.5 GB Memory, 210 GB Storage, and 1 Public IP. The 'Services' section shows a search bar and a 'Create Service' button. The main content area displays the service 'Alpha01A-DBCS' with its version (12.2.0.1), edition (Enterprise Edition), creation date (Nov 28, 2017 9:32:08 PM UTC), and resource usage (1 OCPUs, 7.5 GB Memory, 210 GB Storage).

- Select Add New Key.



The screenshot shows the Oracle Database Cloud Service console with the 'SSH Access' tab selected. Below the navigation bar, a message states: 'Use this page to view and add new SSH public key to all the virtual machines in your service.' A search bar is present. Below the search bar, a table lists the service 'Alpha01A-DBCS' with its type 'Oracle Database Cloud Service' and last update 'Nov 28, 2017 9:32:08 PM UTC'. A red arrow points to the 'Add New Key' button in the 'Actions' column.

- Browse for New Key and select lab300.pub key in the Oracle home directory.



Add New Key

The last modified time is Nov 28, 2017 9:32:08 PM UTC.  
Most recent SSH public key set for this service is shown below. To add a key, select a file from the filesystem, or enter the new value.

☒ Upload a new SSH Public Key value from file:

Browse...

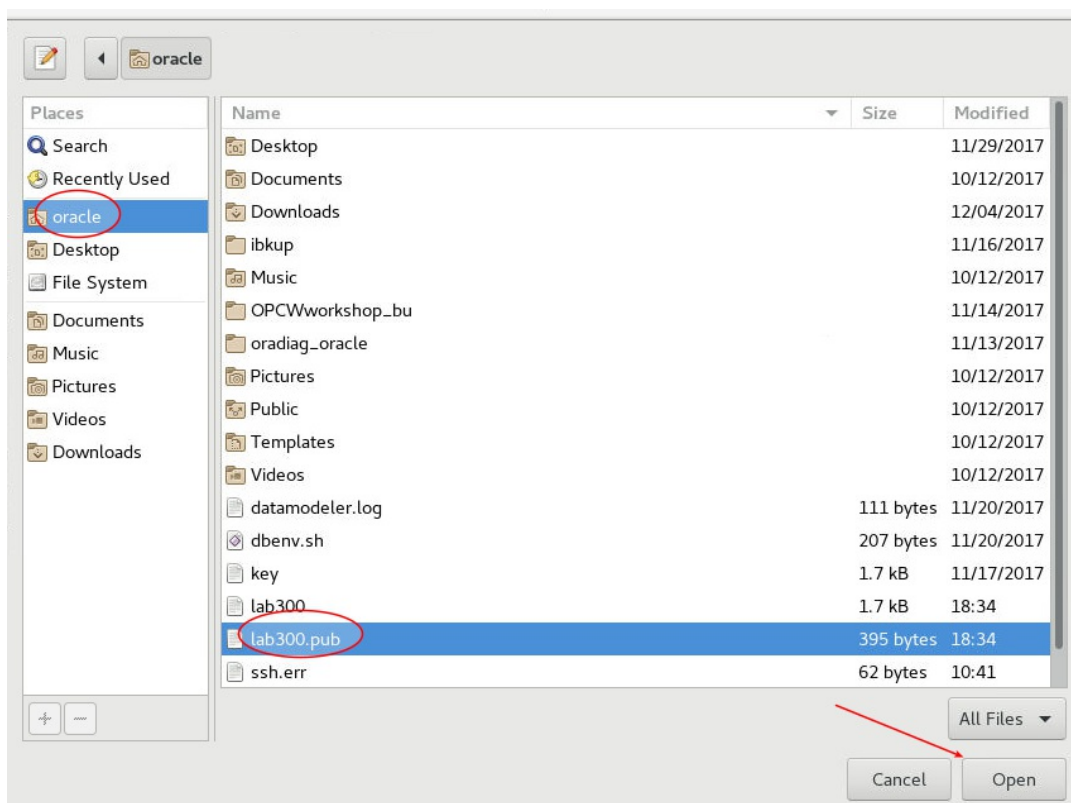
No file selected.

☐ Key value: ssh-rsa

AAAAB3NzaC1yc2EAAAADAQABAAQCNvC1hC/HdtKn  
SDpGeQLb+OC9DIUW6pDTPgfEzRiTkdLUiyZEtg9B2UP8D  
s9BcPAQAEg+Lr  
/e5UE2GgGgGk2J4jSx5NmTZ4PIDqHM8mK+  
/cd/E82e2mCcfqb2mbTwHgmCq6Bv8FHMI9APMA5mVX29N  
xhZh59YI5EKQHzScok9CdmlP4QRi7eeAnwqywrnCyxp73r  
wXuUSMmdPK5QTEfjrhjc5IXBzakyHpNtOyujinYmGZ2dMWi

Add New Key

Cancel



Add New Key

The last modified time is Nov 28, 2017 9:32:08 PM UTC.

Most recent SSH public key set for this service is shown below. To add a key, select a file from the filesystem, or enter the new value.

☒ Upload a new SSH Public Key value from file:

lab300.pub
Update...

☐ Key value: ssh-rsa

```

AAAAB3NzaC1yc2EAAAADAQABAAQCNvC1hC/HdtKn
SDpGeQLb+OC9DIUW6pDTPgfEzRiTkDLUiYzEtg9B2UP8D
s9BcPAQAEg+Lr
/e5UE2GgGgGk2J4jSx5NmTZ4PIDqHM8mK+
/cd/E82e2mCcfqb2mbTwHgmCq6Bv8FhMI9APMA5mVX29N
xhZh59YI5EKQHzScok9CdmIP4QRi7eeAnwqywrnCyxp73r
wXuUSMmdPK5QTEfjrhc5IXBzakyHpNtOyujinYmGZ2dMWi

```

Add New Key
Cancel

Add New Key

Confirm that you wish to add a new key.

Submit
Cancel

- In a few seconds you will see a message indicating the SSH Key has been accepted.

SSH key has been accepted

Use this page to view and add new SSH public key to all the virtual machines in your service.

Search

Service Name
Search

Service Type
Oracle Database Cloud Service

Results per page: 10
1 result(s) as of Dec 12, 2017 11:25:15 PM UTC

Service Name	Service Type	Last Update	Actions
Alpha01A-DBCS	Oracle Database Cloud Service	Dec 12, 2017 11:50:25 PM UTC	Add New Key

## STEP 7: Confirm Access

- Go back to your terminal window and SSH to the image using the new key. Enter the following.



- `ssh -i /home/oracle/lab300 oracle@<your DBCS IP>`
- `ls`

```

File Edit View Search Terminal Help
SHA256:lq0mNnUfuys2CzzclICvdvcK6yjlX6XSePN+kn4Zv94 oracle@b09b21
The key's randomart image is:
+---[RSA 2048]-----+
|
|      .      |
|     . .     |
|    + o      |
|   S = o     |
|  =.* ..o.   |
| +oX++o+. +  |
| ..+=@+oo+ o |
|  ..*+OB*ooE |
+-----[SHA256]-----+
[oracle@b09b21 ~]$ ls
datamodeler.log  Documents  key        Music      Pictures  ssh.out
dbenv.sh         Downloads  lab300     OPCWorkshop_bu  Public    Templates
Desktop         ibkup     lab300.pub oradiag_oracle  ssh.err   Videos
[oracle@b09b21 ~]$ chmod 600 lab300
[oracle@b09b21 ~]$ ssh -i /home/oracle/lab300 oracle@129.157.187.248
[oracle@Alpha01A-DBCS ~]$ ls
alpha.dmp      dbsetup.out.2407  dbsetup.sh      oracle
bkup           dbsetup.out.2408  import.log      tmp
dbsetup.out.2299  dbsetup.out.2420  inject-sshkeys.sh
[oracle@Alpha01A-DBCS ~]$ █

```

- Then exit.