OEL 7 – Oracle Database 21c Express Edition

Version:	1.0.0
Created by:	cloudimg

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1.) Overview

This document is provided as a user guide for the OEL 7 – Oracle Database 21c Express Edition product offering on the AWS Marketplace. Please reach out to support@cloudimg.co.uk if any issues are encountered following this user guide for the chosen product offering.

2.)Access & Security

Please update the security group of the target instance to allow the below ports and protocols for access and connectivity.

Protocol	Type	Port	Description
SSH	TCP	22	SSH connectivity
TCP	TCP	1521	Oracle Database Listener Port

3.)System Requirements

The minimum system requirements for the chosen product offering can be found below

Minimum CPU	Minimum RAM	Required Disk Space
1	1 GB	20 GB

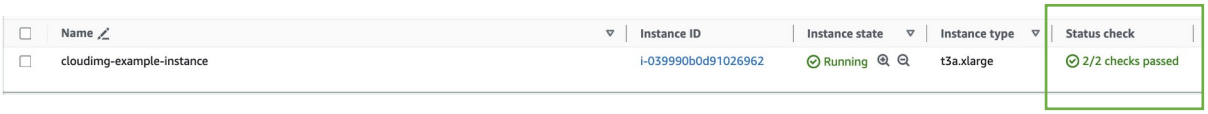
4.) Connecting to the Instance

Once launched in the Amazon EC2 Service, please connect to the instance via an SSH client using the **ec2-user** with the key pair associated at launch. Once connected as the **ec2-user** user, you will be able to sudo to the **root** user by issuing the below command.

Switch to the root user.

```
sudo su -
```

NOTE: Please allow the EC2 Instance to reach 2/2 successful status checks to ensure you will be able to connect successfully with the ec2-key pair assigned at launch. Upon attempting to SSH to early you may receive errors such as below, this is expected with an early SSH connection. Allow the EC2 instance to reach 2/2 status checks and you will be able successfully connect with the ec2-key pair assigned at launch as the ec2-user.



Example errors you may receive with an early SSH connection.

```
Permission denied (publickey,gssapi-keyex,gssapi-with-mic).

ec2-user@your-instance-ip's password:
```

5.) On Startup

An OS package update script has been configured to run on boot to ensure the image is fully up to date at first use. You can disable this feature by removing the script from /stage/scripts/ and deleting the entry in crontab for the root user.

Disable the OS update script from running on reboot

```
rm -f /stage/scripts/initial_boot_update.sh

crontab -e

#DELETE THE BELOW LINE. SAVE AND EXIT THE FILE.
@reboot /stage/scripts/initial_boot_update.sh
```

6.) Filesystem Configuration

Please see below for a screenshot of the server disk configuration and specific mount point mappings for software locations.

```
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        1.9G     0  1.9G   0% /dev
tmpfs           1.9G     0  1.9G   0% /dev/shm
tmpfs           1.9G  8.5M  1.9G   1% /run
tmpfs           1.9G     0  1.9G   0% /sys/fs/cgroup
/dev/nvme0n1p2   38G  3.5G   32G  10% /
/dev/nvme1n1     20G  6.5G   13G  35% /opt/oracle
/dev/nvme0n1p1  2.0G  143M  1.7G   8% /boot
tmpfs           389M     0  389M   0% /run/user/1002
tmpfs           389M     0  389M   0% /run/user/0
```

Mount Point	Description
/boot	Operating System Kernel files
/opt/oracle	Oracle software installation directory

7.) Server Components

Please see below for a list of installed server components and their respective installation paths. The below versions are subject to change on initial boot based on the initial_boot_update.sh script finding new versions of the software in the systems package repositories.

Component	Version	Software Home
AWS CLI	2.7.7	/usr/local/aws-cli
AWS CloudWatch Agent	1.247352.0b251908	/opt/aws/amazon-cloudwatch-agent
AWS Systems Manager Agent	3.0.1390.0	/usr/bin/amazon-ssm-agent
Cloud-Init	19.4	/etc/cloud
Oracle Database 21c XE	21.3	/opt/oracle

8.) Scripts and Log Files

The below table provides a breakdown of any scripts & log files created to enhance the useability of the chosen offering.

Script/Log	Path	Description
Initial_boot_update.sh	/stage/scripts	Update the Operating System with the latest updates available.
Initial_boot_update.log	/stage/scripts	Provides output for initial_boot_update.sh
/stage/scripts/oracle-database-xe-config.log	/stage/scripts	Oracle Database user credentials

9.) Using System Components

Instructions can be found below for using each component of the server build mentioned in section 7 of this user guide document.

AWS CLI

Using AWS CLI – as any OS user.

```
aws --help
```

```

```

AWS CloudWatch Agent

On first use run the below command as the **root** user to configure the AWS CloudWatch Agent for your needs.

```
/opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent-config-wizard
```

Once configured, you will be able to start the AWS CloudWatch Agent via the below command as the **root** user

```
/opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent-ctl -a fetch-config -m ec2 -s -c
file:/opt/aws/amazon-cloudwatch-agent/bin/config.json
```

Check status of the AWS CloudWatch Agent

```
/opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent-ctl -m ec2 -a status
```

EXAMPLE EXPECTED OUTPUT (This may differ based on your configured setup)

```
{
  "status": "running",
  "starttime": "2022-06-05T12:10:13+0000",
  "configstatus": "configured",
  "cwoc_status": "stopped",
  "cwoc_starttime": "",
  "cwoc_configstatus": "not configured",
  "version": "1.247350.0b251814"
}
```

AWS Systems Manager

Check the status of the AWS Systems Manager Agent as the **root** user.

```

```

```
systemctl status amazon-ssm-agent
```

Cloud-Init

Edit the /etc/cloud/cloud.cfg file to reflect your desired configuration. A link to the cloud-init official documentation can be found below for referencing best practise for your use case.

https://cloudinit.readthedocs.io/en/latest/topics/datasources/ec2.html

```
vi /etc/cloud/cloud.cfg
```

Oracle Database

Oracle Database XE has been preinstalled on the system. You can start and or stop this example database via the below commands as the **root** OS user. By default, the Oracle XE database service has been configured to run on boot.

Run – Once logged into the server as the ec2-user, switch to the **root** user. (Please type this command instead of copy paste)

```
sudo su -
```

Run – The below to check the status of the Oracle XE database service

```
systemctl status oracle-xe-21c
```

EXPECTED OUTPUT

```
● oracle-xe-21c.service - SYSV: This script is responsible for taking care of configuring the
RPM Oracle XE Database and its associated services.
   Loaded: loaded (/etc/rc.d/init.d/oracle-xe-21c; bad; vendor preset: disabled)
   Active: active (exited) since Wed 2023-04-05 10:02:49 EDT; 23s ago
     Docs: man:systemd-sysv-generator(8)
  Process: 2233 ExecStop=/etc/rc.d/init.d/oracle-xe-21c stop (code=exited, status=0/SUCCESS)
  Process: 2425 ExecStart=/etc/rc.d/init.d/oracle-xe-21c start (code=exited, status=0/SUCCESS)
```

```
Apr 05 10:02:43 orcl.us.oracle.com systemd[1]: Starting SYSV: This script is responsible for
taking care of configuring the RPM Oracle XE Database and its associated services....
Apr 05 10:02:43 orcl.us.oracle.com oracle-xe-21c[2425]: Starting Oracle Net Listener.
Apr 05 10:02:43 orcl.us.oracle.com su[2432]: (to oracle) root on none
Apr 05 10:02:43 orcl.us.oracle.com oracle-xe-21c[2425]: Oracle Net Listener started.
Apr 05 10:02:43 orcl.us.oracle.com oracle-xe-21c[2425]: Starting Oracle Database instance XE.
Apr 05 10:02:43 orcl.us.oracle.com su[2438]: (to oracle) root on none
Apr 05 10:02:49 orcl.us.oracle.com systemd[1]: Started SYSV: This script is responsible for
taking care of configuring the RPM Oracle XE Database and its associated services..
Apr 05 10:02:49 orcl.us.oracle.com oracle-xe-21c[2425]: Oracle Database instance XE started.
```

Run – Issue the below commands to stop and or start the oracle xe database service as required via the **root** user.

```
#Stop the Oracle XE Database Service
systemctl stop oracle-xe-21c

#Start the Oracle XE Database Service
systemctl start oracle-xe-21c

#Check the status of the Oracle XE Database service
systemctl status oracle-xe-21c
```

Run – Issue the below commands as the **oracle** user to access the Oracle XE sample database via SQLPLUS.

```
#Switch to the oracle user
sudo su - oracle

#Access the Oracle XE sample database as sysdba via SQLPLUS
sqlplus / as sysdba
```

EXPECTED OUTPUT

```
SQL*Plus: Release 21.0.0.0.0 - Production on Wed Apr 5 10:03:48 2023
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle.  All rights reserved.
```

```
Connected to:
Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0
```

The Oracle Database XE is now open and ready for use.

NOTE: if you would like to access the database using the SYSTEM user, please refer to the randomly generated credentials located in file: /stage/scripts/oracle-database-xe-config.log.

If you would also like to connect to the database via an external programme such as SQL Developer, please reference the below screenshot for the correct settings such as Port & Service Name. The IP address will differ based on the IP of your instance.