Ubuntu Server 22.04 – SQL Server 2022 Standard

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1.) Overview

This document is provided as a user guide for the Ubuntu Server 22.04 – SQL Server 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.

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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
Custom TCP	TCP	1433	SQL Server Database 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	2 GB	6 GB

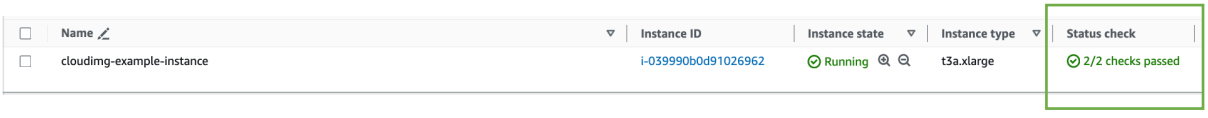
4.) Connecting to the Instance

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:
```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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
udev            1.9G     0  1.9G   0% /dev
tmpfs           387M  828K  386M   1% /run
/dev/nvme0n1p3   38G  6.5G   29G  19% /
tmpfs           1.9G     0  1.9G   0% /dev/shm
tmpfs           5.0M     0  5.0M   0% /run/lock
tmpfs           1.9G     0  1.9G   0% /sys/fs/cgroup
/dev/nvme0n1p2  2.0G  173M  1.7G  10% /boot
/dev/nvme1n1    9.8G  1.3G  8.1G  14% /var/opt/mssql
/dev/loop1       56M   56M     0 100% /snap/core18/2409
/dev/loop2       92M   92M     0 100% /snap/lxd/24061
/dev/loop3       64M   64M     0 100% /snap/core20/1738
/dev/loop4       62M   62M     0 100% /snap/core20/1518
/dev/loop0       56M   56M     0 100% /snap/core18/2667
/dev/loop5       68M   68M     0 100% /snap/lxd/22753
/dev/loop6       50M   50M     0 100% /snap/snapd/17883
tmpfs           387M     0  387M   0% /run/user/1002
```


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Mount Point	Description
/boot	Operating System Kernel files
/var/opt/mssql	SQL Server 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	3.1.1476.0	/usr/bin/amazon-ssm-agent
Cloud-Init	22.1.1	/etc/cloud
SQL Server	2022 – Standard	/var/opt/mssql

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
mysql_root_password.log	/stage/scripts	MySQL root database password file

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
```

SQL Server

The SQL Server Database service has been configured to start on boot, please use the below commands to start, stop and check the status of the service.

```
#Check the SQL Server service is running
systemctl status mssql-server

#Stop the SQL Server service
systemctl stop mssql-server

#Start the SQL Server service
systemctl start mssql-server
```

You can access the SQL Server database CLI as the root user by referring to the instructions in the /stage/scripts/mssql_admin_password.log file.

```
sqlcmd -S localhost -U -SA -C

#Enter the randomly generated password found in the /stage/scripts/mssql_admin_password.log file
```