

## VM creation

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Azure logo, a search bar, and a user profile. The main content area displays the 'Overview' page for a virtual machine named 'virtual-machine-2'. The left sidebar contains a navigation menu with options like 'Overview', 'Activity log', 'Access control (IAM)', 'Tags', 'Diagnose and solve problems', 'Resource visualizer', 'Connect', 'Networking', 'Settings', 'Disks', 'Extensions + applications', 'Operating system', 'Configuration', 'Advisor recommendations', 'Properties', and 'Locks'. The main content area is divided into sections: 'Essentials' (showing resource group, status, location, subscription, and tags), 'Properties' (showing computer name, operating system, VM generation, and architecture), and 'Networking' (showing public and private IP addresses). A 'JSON View' button is visible in the top right corner of the main content area.

## VM ssh

```
C:\Users\ryand\Desktop\sem5\assignment02>ssh -i virtual-machine-2_key.pem azureuser@172.191.111.43
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-1012-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Mon Nov 24 03:23:53 UTC 2025

System load:  0.13           Processes:    116
Usage of /:   5.6% of 28.02GB Users logged in:  0
Memory usage: 29%           IPv4 address for eth0: 172.18.0.4
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

azureuser@virtual-machine-2:~$
```

## Java

```
Adding debian:emSign_Root_CA_-_C1.pem
Adding debian:emSign_Root_CA_-_G1.pem
Adding debian:vTrus_ECC_Root_CA.pem
Adding debian:vTrus_Root_CA.pem
done.
Setting up openjdk-17-jdk-headless:amd64 (17.0.17+10-1-24.04) ...
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jar to provide /usr/bin/jar (jar) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jarsigner to provide /usr/bin/jarsigner (jarsigner) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/javac to provide /usr/bin/javac (javac) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/javadoc to provide /usr/bin/javadoc (javadoc) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/javap to provide /usr/bin/javap (javap) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jcmd to provide /usr/bin/jcmd (jcmd) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jdb to provide /usr/bin/jdb (jdb) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jdeprscan to provide /usr/bin/jdeprscan (jdeprscan) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jdeps to provide /usr/bin/jdeps (jdeps) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jfr to provide /usr/bin/jfr (jfr) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jimage to provide /usr/bin/jimage (jimage) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jinfo to provide /usr/bin/jinfo (jinfo) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jlink to provide /usr/bin/jlink (jlink) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jmap to provide /usr/bin/jmap (jmap) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jmod to provide /usr/bin/jmod (jmod) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jps to provide /usr/bin/jps (jps) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jrunscript to provide /usr/bin/jrunscript (jrunscript) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jshell to provide /usr/bin/jshell (jshell) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jstack to provide /usr/bin/jstack (jstack) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jstat to provide /usr/bin/jstat (jstat) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jstatd to provide /usr/bin/jstatd (jstatd) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/serialver to provide /usr/bin/serialver (serialver) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jhsdb to provide /usr/bin/jhsdb (jhsdb) in auto mode
Setting up openjdk-17-jre:amd64 (17.0.17+10-1-24.04) ...
Setting up openjdk-17-jdk:amd64 (17.0.17+10-1-24.04) ...
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jconsole to provide /usr/bin/jconsole (jconsole) in auto mode
Processing triggers for libc-bin (2.39-0ubuntu8.6) ...
Processing triggers for libgdk-pixbuf-2.0-0:amd64 (2.42.10+dfsg-3ubuntu3.2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
azureuser@virtual-machine-1:~$ java -version
openjdk version "17.0.17" 2025-10-21
OpenJDK Runtime Environment (build 17.0.17+10-Ubuntu-124.04)
OpenJDK 64-Bit Server VM (build 17.0.17+10-Ubuntu-124.04, mixed mode, sharing)
azureuser@virtual-machine-1:~$
```

## Postgres

```
ALTER: command not found
ALTER: command not found
GRANT: command not found
Command 'q' not found, but can be installed with:
snap install q # version 1.6.3-1, or
apt install python3-q-text-as-data # version 3.1.6-3
See 'snap info q' for additional versions.
logout
azureuser@virtual-machine-2:~$ sudo -i -u postgres
postgres@virtual-machine-2:~$ psql
psql (16.10 (Ubuntu 16.10-0ubuntu0.24.04.1))
Type "help" for help.

postgres=# CREATE DATABASE sonar;
CREATE DATABASE
postgres=# CREATE USER sonar WITH PASSWORD 'sonar';
ERROR: role "sonar" already exists
postgres=# ALTER ROLE sonar SET client_encoding TO 'utf8';
ALTER ROLE
postgres=# ALTER ROLE sonar SET default_transaction_isolation TO 'read committed';
ALTER ROLE
postgres=# ALTER ROLE sonar SET timezone TO 'UTC';
ALTER ROLE
postgres=# GRANT ALL PRIVILEGES ON DATABASE sonar TO sonar;
GRANT
postgres=# \q
postgres@virtual-machine-2:~$ exit
logout
azureuser@virtual-machine-2:~$ |
```

## Sonar

```
Created symlink /etc/systemd/system/multi-user.target.wants/sonarqube.service → /etc/systemd/system/sonarqube.service.
azuruser@virtual-machine-2:~$ sudo systemctl status sonarqube
● sonarqube.service - SonarQube service
   Loaded: loaded (/etc/systemd/system/sonarqube.service; enabled; preset: enabled)
   Active: active (running) since Mon 2025-11-24 03:38:12 UTC; 28ms ago
     Process: 6931 ExecStart=/opt/sonarqube/bin/linux-x86-64/sonar.sh start (code=exited, status=0/SUCCESS)
    Main PID: 6954 (java)
       Tasks: 1# (Limit: 999)
      Memory: 51.0M (peak: 51.0M)
         CPU: 120ms
    CGroup: /system.slice/sonarqube.service
            └─6954 java -Xms8m -Xmx32m --add-exports=java.base/jdk.internal.ref=ALL-UNNAMED --add-opens=java.base/java.lang=ALL-UNNAMED --add-opens=java.base/java.nio=ALL-UNNAMED --add-opens=java.base/sun.nio

Nov 24 03:38:11 virtual-machine-2 systemd[1]: sonarqube.service: Consumed 2.028s CPU time, 42.6M memory peak, 0B memory swap peak.
Nov 24 03:38:11 virtual-machine-2 systemd[1]: sonarqube.service: Scheduled restart job, restart counter is at 1.
Nov 24 03:38:11 virtual-machine-2 systemd[1]: Starting sonarqube.service - SonarQube service...
Nov 24 03:38:11 virtual-machine-2 sonar.sh[6931]: /usr/bin/java
Nov 24 03:38:11 virtual-machine-2 sonar.sh[6931]: Starting SonarQube...
Nov 24 03:38:12 virtual-machine-2 sonar.sh[6931]: Started SonarQube.
Nov 24 03:38:12 virtual-machine-2 systemd[1]: Started sonarqube.service - SonarQube service.
lines 1-18/18 (END)
```