Last login: Sat Nov 30 14:01:58 on ttys000

(base) tahayasin@Tahas-MacBook-Pro ~ % chmod 400 "assignment1.pem"

chmod: assignment1.pem: No such file or directory

(base) tahayasin@Tahas-MacBook-Pro ~ % cd ~/Desktop

(base) tahayasin@Tahas-MacBook-Pro Desktop % chmod 400 "assignment1.pem"

(base) tahayasin@Tahas-MacBook-Pro Desktop % ssh -i "assignment1.pem" ubuntu@ec2-

34-234-79-241.compute-1.amazonaws.com

The authenticity of host 'ec2-34-234-79-241.compute-1.amazonaws.com (34.234.79.241)' can't be established.

ED25519 key fingerprint is SHA256:p6QcogDMAHS5q5tpt3r2jn3S+zxMg+doZh1eV+XBx64. This key is not known by any other names.

Are you sure you want to continue connecting (yes/no/[fingerprint])? yes

Warning: Permanently added 'ec2-34-234-79-241.compute-1.amazonaws.com' (ED25519) to the list of known hosts.

Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1015-aws x86_64)

* Documentation: https://help.ubuntu.com

* Management: https://landscape.canonical.com

* Support: https://ubuntu.com/pro

System information as of Sat Nov 30 07:37:31 UTC 2024

System load: 0.38 Processes: 118

Usage of /: 21.1% of 7.57GB Users logged in: 0

Memory usage: 2% IPv4 address for eth0: 172.31.18.238

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.

ubuntu@ip-172-31-18-238:~\$ sudo apt-get update

Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease

Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]

Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [127 kB]

Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]

Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [14.1 MB]

Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe Translation-en [5652 kB]

Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 c-n-f Metadata [286 kB]

Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 Packages [217 kB]

Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse Translation-en [112 kB]

Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 c-n-f Metadata [8372 B]

Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu.jammy-updates/main amd64 Packages [2179 kB]

Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main Translationen [372 kB]

Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [17.9 kB]

Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu.jammy-updates/restricted amd64 Packages [2680 kB]

Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu.jammy-updates/restricted Translation-en [466 kB]

Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 c-n-f Metadata [612 B]

Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1177 kB]

Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu.jammy-updates/universe Translation-en [287 kB]

Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 c-n-f Metadata [26.4 kB]

Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 Packages [43.6 kB]

Get:21 http://us-east-1.ec2.archive.ubuntu.com/ubuntu.jammy-updates/multiverse Translation-en [11.4 kB]

Get:22 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 c-n-f Metadata [440 B]

Get:23 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main amd64 Packages [67.7 kB]

Get:24 http://us-east-1.ec2.archive.ubuntu.com/ubuntu.jammy-backports/main Translation-en [11.1 kB]

Get:25 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main amd64 c-n-f Metadata [388 B]

Get:26 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/restricted amd64 c-n-f Metadata [116 B]

Get:27 http://us-east-1.ec2.archive.ubuntu.com/ubuntu.jammy-backports/universe amd64 Packages [28.9 kB]

Get:28 http://us-east-1.ec2.archive.ubuntu.com/ubuntu.jammy-backports/universe Translation-en [16.5 kB]

Get:29 http://us-east-1.ec2.archive.ubuntu.com/ubuntu.jammy-backports/universe amd64 c-n-f Metadata [672 B]

Get:30 http://us-east-1.ec2.archive.ubuntu.com/ubuntu.jammy-backports/multiverse amd64 c-n-f Metadata [116 B]

Get:31 http://security.ubuntu.com/ubuntu.jammy-security/main amd64 Packages [1956 kB]

Get:32 http://security.ubuntu.com/ubuntu jammy-security/main Translation-en [313 kB] Get:33 http://security.ubuntu.com/ubuntu jammy-security/main amd64 c-n-f Metadata [13.3 kB]

Get:34 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 Packages [2611 kB]

Get:35 http://security.ubuntu.com/ubuntu jammy-security/restricted Translation-en [453 kB]

Get:36 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 c-n-f Metadata [580 B]

Get:37 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [957 kB]

Get:38 http://security.ubuntu.com/ubuntu jammy-security/universe Translation-en [203 kB]

Get:39 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 c-n-f Metadata [19.5 kB]

Get:40 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 Packages [37.6 kB]

Get:41 http://security.ubuntu.com/ubuntu jammy-security/multiverse Translation-en [8260 B]

Get:42 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 c-n-f Metadata [224 B]

Fetched 34.7 MB in 15s (2266 kB/s)

Reading package lists... Done

ubuntu@ip-172-31-18-238:~\$ sudo apt-get install sysbench

Reading package lists... Done

Building dependency tree... Done

Reading state information... Done

The following additional packages will be installed:

libluajit-5.1-2 libluajit-5.1-common libmysqlclient21 libpq5 mysql-common

The following NEW packages will be installed:

libluajit-5.1-2 libluajit-5.1-common libmysqlclient21 libpq5 mysql-common sysbench

0 upgraded, 6 newly installed, 0 to remove and 30 not upgraded.

Need to get 1866 kB of archives.

After this operation, 8498 kB of additional disk space will be used.

Do you want to continue? [Y/n] y

Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 libluajit-5.1-common all 2.1.0~beta3+dfsg-6 [44.3 kB]

Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 libluajit-

5.1-2 amd64 2.1.0~beta3+dfsg-6 [238 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu.jammy/main amd64 mysql-

common all 5.8+1.0.8 [7212 B]

Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libmysqlclient21 amd64 8.0.40-0ubuntu0.22.04.1 [1308 kB]

Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libpq5 amd64 14.13-0ubuntu0.22.04.1 [149 kB]

Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 sysbench amd64 1.0.20+ds-2 [120 kB]

Fetched 1866 kB in 0s (20.8 MB/s)

Selecting previously unselected package libluajit-5.1-common.

(Reading database ... 65783 files and directories currently installed.)

Preparing to unpack .../0-libluajit-5.1-common_2.1.0~beta3+dfsg-6_all.deb ...

Unpacking libluajit-5.1-common (2.1.0~beta3+dfsg-6) ...

Selecting previously unselected package libluajit-5.1-2:amd64.

Preparing to unpack .../1-libluajit-5.1-2 2.1.0~beta3+dfsg-6 amd64.deb ...

Unpacking libluajit-5.1-2:amd64 (2.1.0~beta3+dfsg-6) ...

Selecting previously unselected package mysql-common.

Preparing to unpack .../2-mysql-common_5.8+1.0.8_all.deb ...

Unpacking mysql-common (5.8+1.0.8) ...

Selecting previously unselected package libmysqlclient21:amd64.

Preparing to unpack .../3-libmysqlclient21_8.0.40-0ubuntu0.22.04.1_amd64.deb ...

Unpacking libmysqlclient21:amd64 (8.0.40-0ubuntu0.22.04.1) ...

Selecting previously unselected package libpq5:amd64.

Preparing to unpack .../4-libpq5_14.13-0ubuntu0.22.04.1_amd64.deb ...

Unpacking libpq5:amd64 (14.13-0ubuntu0.22.04.1) ...

Selecting previously unselected package sysbench.

Preparing to unpack .../5-sysbench_1.0.20+ds-2_amd64.deb ...

Unpacking sysbench (1.0.20+ds-2) ...

Setting up mysql-common (5.8+1.0.8) ...

update-alternatives: using /etc/mysql/my.cnf.fallback to provide /etc/mysql/my.cnf (my.cnf)

in auto mode

Setting up libmysqlclient21:amd64 (8.0.40-0ubuntu0.22.04.1) ...

Setting up libpq5:amd64 (14.13-0ubuntu0.22.04.1) ...

Setting up libluajit-5.1-common (2.1.0~beta3+dfsg-6) ...

Setting up libluajit-5.1-2:amd64 (2.1.0~beta3+dfsg-6) ...

Setting up sysbench (1.0.20+ds-2) ...

Processing triggers for man-db (2.10.2-1) ...

Processing triggers for libc-bin (2.35-0ubuntu3.8) ...

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.

ubuntu@ip-172-31-18-238:~\$ sysbench --test=cpu --num-threads=500 --cpu-maxprime=1000

WARNING: the --test option is deprecated. You can pass a script name or path on the command line without any options.

WARNING: --num-threads is deprecated, use --threads instead sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

The 'cpu' test requires a command argument. See 'sysbench cpu help'

ubuntu@ip-172-31-18-238:~\$ sysbench --test=cpu --num-threads=500 --cpu-max-prime=1000 run

WARNING: the --test option is deprecated. You can pass a script name or path on the command line without any options.

WARNING: --num-threads is deprecated, use --threads instead sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:

Number of threads: 500

Initializing random number generator from current time

Prime numbers limit: 1000

Initializing worker threads...

Threads started!

CPU speed:

events per second: 42899.12

General statistics:

total time: 10.0102s

total number of events: 429515

Latency (ms):

min: 0.03
avg: 2.95
max: 250.06
95th percentile: 0.05
sum: 1266588.78

Threads fairness:

events (avg/stddev): 859.0300/1328.57 execution time (avg/stddev): 2.5332/3.63

ubuntu@ip-172-31-18-238:~\$ sysbench --test=cpu --num-threads=500 --cpu-max-prime=5000 run

WARNING: the --test option is deprecated. You can pass a script name or path on the command line without any options.

WARNING: --num-threads is deprecated, use --threads instead

sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:

Number of threads: 500

Initializing random number generator from current time

Prime numbers limit: 5000

Initializing worker threads...

Threads started!

CPU speed:

events per second: 4649.20

General statistics:

total time: 10.0700s total number of events: 46827

Latency (ms):

min: 0.41 avg: 104.27 max: 896.43

95th percentile: 511.33 sum: 4882449.71

Threads fairness:

events (avg/stddev): 93.6540/2.84 execution time (avg/stddev): 9.7649/0.19

ubuntu@ip-172-31-18-238:~\$ sysbench --test=cpu --num-threads=500 --cpu-max-prime=15000 run

WARNING: the --test option is deprecated. You can pass a script name or path on the command line without any options.

WARNING: --num-threads is deprecated, use --threads instead

sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:

Number of threads: 500

Initializing random number generator from current time

Prime numbers limit: 15000

Initializing worker threads...

Threads started!

CPU speed:

events per second: 1040.34

General statistics:

total time: 10.0928s total number of events: 10502

Latency (ms):

min: 1.90 avg: 466.45 max: 970.21

95th percentile: 559.50 sum: 4898683.13

Threads fairness:

sudo apt install fio

events (avg/stddev): 21.0040/0.75 execution time (avg/stddev): 9.7974/0.15

ubuntu@ip-172-31-18-238:~\$ fio --name=randread --ioengine=libaio --rw=randread -bs=4k --size=100M --numjobs=4 --runtime=60 --time_based --group_reporting
Command 'fio' not found, but can be installed with:

ubuntu@ip-172-31-18-238:~\$ sudo apt-get install fio

Reading package lists... Done

Building dependency tree... Done

Reading state information... Done

The following additional packages will be installed:

ibverbs-providers libboost-iostreams1.74.0 libboost-thread1.74.0 libdaxctl1

libgfapi0 libgfrpc0 libgfxdr0 libglusterfs0 libibverbs1 libndctl6

libnl-route-3-200 libpmem1 libpmemblk1 libpmemobj1 librados2 librbd1

librdmacm1

Suggested packages:

gnuplot gfio python-scipy

The following NEW packages will be installed:

fio ibverbs-providers libboost-iostreams 1.74.0 libboost-thread 1.74.0

libdaxctl1 libgfapi0 libgfrpc0 libgfxdr0 libglusterfs0 libibverbs1 libndctl6

libnl-route-3-200 libpmem1 libpmemblk1 libpmemobj1 librados2 librbd1

librdmacm1

0 upgraded, 18 newly installed, 0 to remove and 30 not upgraded.

Need to get 13.1 MB of archives.

After this operation, 46.2 MB of additional disk space will be used.

Do you want to continue? [Y/n] y

Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libgfxdr0 amd64 10.1-1ubuntu0.2 [22.3 kB]

Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libglusterfs0 amd64 10.1-1ubuntu0.2 [287 kB]

Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libgfrpc0 amd64 10.1-1ubuntu0.2 [47.1 kB]

Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libgfapi0 amd64 10.1-1ubuntu0.2 [77.3 kB]

Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libnl-route-3-200 amd64 3.5.0-0.1 [180 kB]

Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libibverbs1 amd64 39.0-1 [69.3 kB]

Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libdaxctl1 amd64 72.1-1 [19.8 kB]

Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libndctl6 amd64 72.1-1 [57.7 kB]

Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libpmem1 amd64 1.11.1-3build1 [81.4 kB]

Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 libpmemblk1 amd64 1.11.1-3build1 [65.6 kB]

Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libboost-iostreams1.74.0 amd64 1.74.0-14ubuntu3 [245 kB]

Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libboost-thread1.74.0 amd64 1.74.0-14ubuntu3 [262 kB]

Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 librdmacm1 amd64 39.0-1 [71.2 kB]

Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 librados2 amd64 17.2.7-0ubuntu0.22.04.1 [3590 kB]

Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libpmemobj1 amd64 1.11.1-3build1 [124 kB]

Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 librbd1 amd64 17.2.7-0ubuntu0.22.04.1 [3547 kB]

Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 fio amd64 3.28-1 [4047 kB]

Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 ibverbs-providers amd64 39.0-1 [341 kB]

Fetched 13.1 MB in 0s (68.2 MB/s)

Selecting previously unselected package libgfxdr0:amd64.

(Reading database ... 65854 files and directories currently installed.)

Preparing to unpack .../00-libgfxdr0_10.1-1ubuntu0.2_amd64.deb ...

Unpacking libgfxdr0:amd64 (10.1-1ubuntu0.2) ...

Selecting previously unselected package libglusterfs0:amd64.

Preparing to unpack .../01-libglusterfs0_10.1-1ubuntu0.2_amd64.deb ...

Unpacking libglusterfs0:amd64 (10.1-1ubuntu0.2) ...

Selecting previously unselected package libgfrpc0:amd64.

Preparing to unpack .../02-libgfrpc0_10.1-1ubuntu0.2_amd64.deb ...

Unpacking libgfrpc0:amd64 (10.1-1ubuntu0.2) ...

Selecting previously unselected package libgfapi0:amd64.

Preparing to unpack .../03-libgfapi0 10.1-1ubuntu0.2 amd64.deb ...

Unpacking libgfapi0:amd64 (10.1-1ubuntu0.2) ...

Selecting previously unselected package libnl-route-3-200:amd64.

Preparing to unpack .../04-libnl-route-3-200_3.5.0-0.1_amd64.deb ...

Unpacking libnl-route-3-200:amd64 (3.5.0-0.1) ...

Selecting previously unselected package libibverbs1:amd64.

Preparing to unpack .../05-libibverbs1_39.0-1_amd64.deb ...

Unpacking libibverbs1:amd64 (39.0-1) ...

```
Selecting previously unselected package libdaxctl1:amd64.
Preparing to unpack .../06-libdaxctl1_72.1-1_amd64.deb ...
Unpacking libdaxctl1:amd64 (72.1-1) ...
Selecting previously unselected package librdctl6:amd64.
Preparing to unpack .../07-libndctl6 72.1-1 amd64.deb ...
Unpacking libndctl6:amd64 (72.1-1) ...
Selecting previously unselected package libpmem1:amd64.
Preparing to unpack .../08-libpmem1_1.11.1-3build1_amd64.deb ...
Unpacking libpmem1:amd64 (1.11.1-3build1) ...
Selecting previously unselected package libpmemblk1:amd64.
Preparing to unpack .../09-libpmemblk1_1.11.1-3build1_amd64.deb ...
Unpacking libpmemblk1:amd64 (1.11.1-3build1) ...
Selecting previously unselected package libboost-iostreams 1.74.0: amd 64.
Preparing to unpack .../10-libboost-iostreams1.74.0 1.74.0-14ubuntu3 amd64.deb ...
Unpacking libboost-iostreams 1.74.0: amd 64 (1.74.0-14 ubuntu 3) ...
Selecting previously unselected package libboost-thread 1.74.0: amd 64.
Preparing to unpack .../11-libboost-thread1.74.0_1.74.0-14ubuntu3_amd64.deb ...
Unpacking libboost-thread 1.74.0: amd 64 (1.74.0-14 ubuntu 3) ...
Selecting previously unselected package librdmacm1:amd64.
Preparing to unpack .../12-librdmacm1_39.0-1_amd64.deb ...
Unpacking librdmacm1:amd64 (39.0-1) ...
Selecting previously unselected package librados2.
Preparing to unpack .../13-librados2 17.2.7-0ubuntu0.22.04.1 amd64.deb ...
Unpacking librados2 (17.2.7-0ubuntu0.22.04.1) ...
Selecting previously unselected package libpmemobil:amd64.
Preparing to unpack .../14-libpmemobj1_1.11.1-3build1_amd64.deb ...
Unpacking libpmemobj1:amd64 (1.11.1-3build1) ...
Selecting previously unselected package librbd1.
Preparing to unpack .../15-librbd1_17.2.7-0ubuntu0.22.04.1_amd64.deb ...
Unpacking librbd1 (17.2.7-0ubuntu0.22.04.1) ...
Selecting previously unselected package fio.
Preparing to unpack .../16-fio_3.28-1_amd64.deb ...
Unpacking fio (3.28-1) ...
Selecting previously unselected package ibverbs-providers:amd64.
Preparing to unpack .../17-ibverbs-providers_39.0-1_amd64.deb ...
Unpacking ibverbs-providers:amd64 (39.0-1) ...
Setting up libboost-iostreams1.74.0:amd64 (1.74.0-14ubuntu3) ...
Setting up libnl-route-3-200:amd64 (3.5.0-0.1) ...
Setting up libglusterfs0:amd64 (10.1-1ubuntu0.2) ...
Setting up libdaxctl1:amd64 (72.1-1) ...
Setting up libndctl6:amd64 (72.1-1) ...
Setting up libpmem1:amd64 (1.11.1-3build1) ...
Setting up libgfxdr0:amd64 (10.1-1ubuntu0.2) ...
Setting up libboost-thread1.74.0:amd64 (1.74.0-14ubuntu3) ...
```

```
Setting up libibverbs1:amd64 (39.0-1) ...
Setting up ibverbs-providers:amd64 (39.0-1) ...
Setting up libpmemobj1:amd64 (1.11.1-3build1) ...
Setting up libpmemblk1:amd64 (1.11.1-3build1) ...
Setting up libgfrpc0:amd64 (10.1-1ubuntu0.2) ...
Setting up librdmacm1:amd64 (39.0-1) ...
Setting up librados2 (17.2.7-0ubuntu0.22.04.1) ...
Setting up librbd1 (17.2.7-0ubuntu0.22.04.1) ...
Setting up libgfapi0:amd64 (10.1-1ubuntu0.2) ...
Setting up fio (3.28-1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.8) ...
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 (gemu) binaries on this host.
ubuntu@ip-172-31-18-238:~$ fio --name=randread --ioengine=libaio --rw=randread --
bs=4k --size=1G --numjobs=4 --runtime=60 --time_based --group_reporting
randread: (g=0): rw=randread, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T) 4096B-4096B,
ioengine=libaio, iodepth=1
...
fio-3.28
Starting 4 processes
randread: Laying out IO file (1 file / 1024MiB)
randread: Laying out IO file (1 file / 1024MiB)
randread: Laying out IO file (1 file / 1024MiB)
randread: Laying out IO file (1 file / 1024MiB)
Jobs: 4 (f=4): [r(4)][100.0%][r=12.0MiB/s][r=3063 IOPS][eta 00m:00s]
randread: (groupid=0, jobs=4): err= 0: pid=3714: Sat Nov 30 07:45:56 2024
 read: IOPS=3110, BW=12.2MiB/s (12.7MB/s)(729MiB/60001msec)
  slat (usec): min=361, max=26621, avg=1277.65, stdev=216.54
  clat (nsec): min=0, max=58003, avg=2681.01, stdev=865.72
  lat (usec): min=364, max=26628, avg=1281.68, stdev=216.58
  clat percentiles (nsec):
  1.00th=[2128], 5.00th=[2288], 10.00th=[2352], 20.00th=[2448],
  | 30.00th=[ 2480], 40.00th=[ 2512], 50.00th=[ 2576], 60.00th=[ 2640],
```

```
70.00th=[2800], 80.00th=[2864], 90.00th=[3024], 95.00th=[3184],
  | 99.00th=[3536], 99.50th=[5472], 99.90th=[16192], 99.95th=[23936],
  | 99.99th=[30336]
 bw ( KiB/s): min=12128, max=28532, per=100.00%, avg=12454.49, stdev=415.25,
samples=476
         : min= 3032, max= 7132, avg=3113.61, stdev=103.79, samples=476
 iops
lat (nsec) : 2=0.38%, 10=0.01%, 20=0.01%, 50=0.01%, 100=0.01%
lat (nsec): 250=0.01%, 500=0.02%, 750=0.03%, 1000=0.03%
lat (usec) : 2=0.34%, 4=98.33%, 10=0.70%, 20=0.07%, 50=0.08%
lat (usec) : 100=0.01%
        : usr=0.90%, sys=2.44%, ctx=186659, majf=0, minf=50
cpu
IO depths : 1=100.0%, 2=0.0%, 4=0.0%, 8=0.0%, 16=0.0%, 32=0.0%, >=64=0.0%
  submit : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%
  complete: 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%
  issued rwts: total=186650,0,0,0 short=0,0,0,0 dropped=0,0,0,0
  latency: target=0, window=0, percentile=100.00%, depth=1
Run status group 0 (all jobs):
 READ: bw=12.2MiB/s (12.7MB/s), 12.2MiB/s-12.2MiB/s (12.7MB/s-12.7MB/s), io=729MiB
(765MB), run=60001-60001msec
Disk stats (read/write):
xvda: ios=186154/12, merge=0/12, ticks=231115/30, in queue=231145, util=89.76%
ubuntu@ip-172-31-18-238:~$ fio --name=randwrite --ioengine=libaio --rw=randwrite --
bs=4k --size=100M --numjobs=4 --runtime=60 --time based --group reporting
randwrite: (g=0): rw=randwrite, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T) 4096B-4096B,
ioengine=libaio, iodepth=1
fio-3.28
Starting 4 processes
randwrite: Laying out IO file (1 file / 100MiB)
randwrite: Laying out IO file (1 file / 100MiB)
randwrite: Laying out IO file (1 file / 100MiB)
randwrite: Laying out IO file (1 file / 100MiB)
Jobs: 4 (f=4): [w(4)][100.0%][w=8560KiB/s][w=2140 IOPS][eta 00m:00s]
randwrite: (groupid=0, jobs=4): err= 0: pid=3722: Sat Nov 30 07:50:52 2024
write: IOPS=31.8k, BW=124MiB/s (130MB/s)(7552MiB/60783msec); 0 zone resets
 slat (nsec): min=0, max=22738k, avg=4756.60, stdev=49829.82
 clat (nsec): min=0, max=4455.6k, avg=1458.95, stdev=16402.66
  lat (nsec): min=0, max=22746k, avg=6984.95, stdev=53889.66
 clat percentiles (nsec):
  | 1.00th=[ 0], 5.00th=[ 676], 10.00th=[ 1272], 20.00th=[ 1272],
  | 30.00th=[ 1272], 40.00th=[ 1272], 50.00th=[ 1288], 60.00th=[ 1288],
  | 70.00th=[ 1288], 80.00th=[ 1304], 90.00th=[ 1320], 95.00th=[ 1432],
```

```
| 99.00th=[ 4512], 99.50th=[ 5152], 99.90th=[ 13888], 99.95th=[ 16320], | 99.99th=[150528]
```

bw (KiB/s): min=99272, max=819610, per=100.00%, avg=581818.42, stdev=63658.34, samples=106

iops : min=24818, max=204902, avg=145454.50, stdev=15914.57, samples=106

lat (nsec) : 2=4.10%, 4=0.01%, 10=0.01%, 20=0.01%, 50=0.01%

lat (nsec): 100=0.03%, 250=0.07%, 500=0.14%, 750=1.83%, 1000=0.82%

lat (usec) : 2=89.63%, 4=1.90%, 10=1.24%, 20=0.20%, 50=0.01%

lat (usec): 100=0.01%, 250=0.01%, 500=0.01%, 750=0.01%

lat (msec) : 2=0.01%, 4=0.01%, 10=0.01%

cpu : usr=3.07%, sys=5.18%, ctx=39749, majf=0, minf=55

IO depths : 1=100.0%, 2=0.0%, 4=0.0%, 8=0.0%, 16=0.0%, 32=0.0%, >=64=0.0% submit : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0% complete : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%

issued rwts: total=0,1933220,0,0 short=0,0,0,0 dropped=0,0,0,0 latency: target=0, window=0, percentile=100.00%, depth=1

Run status group 0 (all jobs):

WRITE: bw=124MiB/s (130MB/s), 124MiB/s-124MiB/s (130MB/s-130MB/s), io=7552MiB (7918MB), run=60783-60783msec

Disk stats (read/write):

xvda: ios=0/60842, merge=0/63, ticks=0/1281638, in_queue=1281638, util=96.20% **ubuntu@ip-172-31-18-238:~**\$ sudo apt-get install postgresql postgresql-contrib

Reading package lists... Done

Building dependency tree... Done

Reading state information... Done

The following additional packages will be installed:

libcommon-sense-perl libjson-perl libjson-xs-perl libllvm14

libsensors-config libsensors5 libtypes-serialiser-perl postgresql-14

postgresql-client-14 postgresql-client-common postgresql-common ssl-cert sysstat

Suggested packages:

lm-sensors postgresql-doc postgresql-doc-14 isag

The following NEW packages will be installed:

libcommon-sense-perl libjson-perl libjson-xs-perl libllvm14

libsensors-config libsensors5 libtypes-serialiser-perl postgresql

postgresql-14 postgresql-client-14 postgresql-client-common

postgresql-common postgresql-contrib ssl-cert sysstat

0 upgraded, 15 newly installed, 0 to remove and 30 not upgraded.

Need to get 42.3 MB of archives.

After this operation, 161 MB of additional disk space will be used.

Do you want to continue? [Y/n] y

Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libcommonsense-perl amd64 3.75-2build1 [21.1 kB]

Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libjson-perl all 4.04000-1 [81.8 kB]

Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libtypes-serialiser-perl all 1.01-1 [11.6 kB]

Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libjson-xs-perl amd64 4.030-1build3 [87.2 kB]

Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libllvm14 amd64 1:14.0.0-1ubuntu1.1 [24.0 MB]

Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libsensors-config all 1:3.6.0-7ubuntu1 [5274 B]

Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libsensors5 amd64 1:3.6.0-7ubuntu1 [26.3 kB]

Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 postgresql-client-common all 238 [29.6 kB]

Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 postgresql-client-14 amd64 14.13-0ubuntu0.22.04.1 [1225 kB]

Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 ssl-cert all 1.1.2 [17.4 kB]

Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 postgresql-common all 238 [169 kB]

Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 postgresql-14 amd64 14.13-0ubuntu0.22.04.1 [16.2 MB]

Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 postgresql all 14+238 [3288 B]

Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 postgresql-contrib all 14+238 [3292 B]

Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 sysstat amd64 12.5.2-2ubuntu0.2 [487 kB]

Fetched 42.3 MB in 1s (71.1 MB/s)

Preconfiguring packages ...

Selecting previously unselected package libcommon-sense-perl:amd64.

(Reading database ... 66187 files and directories currently installed.)

Preparing to unpack .../00-libcommon-sense-perl_3.75-2build1_amd64.deb ...

Unpacking libcommon-sense-perl:amd64 (3.75-2build1) ...

Selecting previously unselected package libison-perl.

Preparing to unpack .../01-libjson-perl_4.04000-1_all.deb ...

Unpacking libjson-perl (4.04000-1) ...

Selecting previously unselected package libtypes-serialiser-perl.

Preparing to unpack .../02-libtypes-serialiser-perl_1.01-1_all.deb ...

Unpacking libtypes-serialiser-perl (1.01-1) ...

Selecting previously unselected package libjson-xs-perl.

Preparing to unpack .../03-libjson-xs-perl_4.030-1build3_amd64.deb ...

Unpacking libjson-xs-perl (4.030-1build3) ...

Selecting previously unselected package libllvm14:amd64.

Preparing to unpack .../04-libllvm14_1%3a14.0.0-1ubuntu1.1_amd64.deb ...

Unpacking libllvm14:amd64 (1:14.0.0-1ubuntu1.1) ...

Selecting previously unselected package libsensors-config.

Preparing to unpack .../05-libsensors-config_1%3a3.6.0-7ubuntu1_all.deb ...

Unpacking libsensors-config (1:3.6.0-7ubuntu1) ...

Selecting previously unselected package libsensors5:amd64.

Preparing to unpack .../06-libsensors5_1%3a3.6.0-7ubuntu1_amd64.deb ...

Unpacking libsensors5:amd64 (1:3.6.0-7ubuntu1) ...

Selecting previously unselected package postgresql-client-common.

Preparing to unpack .../07-postgresql-client-common_238_all.deb ...

Unpacking postgresql-client-common (238) ...

Selecting previously unselected package postgresql-client-14.

Preparing to unpack .../08-postgresql-client-14_14.13-0ubuntu0.22.04.1_amd64.deb ...

Unpacking postgresql-client-14 (14.13-0ubuntu0.22.04.1) ...

Selecting previously unselected package ssl-cert.

Preparing to unpack .../09-ssl-cert_1.1.2_all.deb ...

Unpacking ssl-cert (1.1.2) ...

Selecting previously unselected package postgresql-common.

Preparing to unpack .../10-postgresql-common_238_all.deb ...

Adding 'diversion of /usr/bin/pg_config to /usr/bin/pg_config.libpq-dev by postgresql-common'

Unpacking postgresql-common (238) ...

Selecting previously unselected package postgresql-14.

Preparing to unpack .../11-postgresql-14_14.13-0ubuntu0.22.04.1_amd64.deb ...

Unpacking postgresql-14 (14.13-0ubuntu0.22.04.1) ...

Selecting previously unselected package postgresql.

Preparing to unpack .../12-postgresql 14+238 all.deb ...

Unpacking postgresql (14+238) ...

Selecting previously unselected package postgresql-contrib.

Preparing to unpack .../13-postgresql-contrib_14+238_all.deb ...

Unpacking postgresql-contrib (14+238) ...

Selecting previously unselected package sysstat.

Preparing to unpack .../14-sysstat_12.5.2-2ubuntu0.2_amd64.deb ...

Unpacking sysstat (12.5.2-2ubuntu0.2) ...

Setting up postgresql-client-common (238) ...

Setting up libsensors-config (1:3.6.0-7ubuntu1) ...

Setting up libcommon-sense-perl:amd64 (3.75-2build1) ...

Setting up postgresql-client-14 (14.13-0ubuntu0.22.04.1) ...

update-alternatives: using /usr/share/postgresql/14/man/man1/psql.1.gz to provide

/usr/share/man/man1/psql.1.gz (psql.1.gz) in auto mode

Setting up ssl-cert (1.1.2) ...

Setting up libsensors5:amd64 (1:3.6.0-7ubuntu1) ...

Setting up libllvm14:amd64 (1:14.0.0-1ubuntu1.1) ... Setting up libtypes-serialiser-perl (1.01-1) ... Setting up libjson-perl (4.04000-1) ... Setting up sysstat (12.5.2-2ubuntu0.2) ...

Creating config file /etc/default/sysstat with new version

update-alternatives: using /usr/bin/sar.sysstat to provide /usr/bin/sar (sar) in auto mode Created symlink /etc/systemd/system/sysstat.service.wants/sysstat-collect.timer → /lib/systemd/system/sysstat-collect.timer.

Created symlink /etc/systemd/system/sysstat.service.wants/sysstat-summary.timer → /lib/systemd/system/sysstat-summary.timer.

Created symlink /etc/systemd/system/multi-user.target.wants/sysstat.service → /lib/systemd/system/sysstat.service.

Setting up libjson-xs-perl (4.030-1build3) ...

Setting up postgresql-common (238) ...

Adding user postgres to group ssl-cert

Creating config file /etc/postgresql-common/createcluster.conf with new version Building PostgreSQL dictionaries from installed myspell/hunspell packages... Removing obsolete dictionary files:

Created symlink /etc/systemd/system/multi-user.target.wants/postgresql.service → /lib/systemd/system/postgresql.service.

Setting up postgresql-14 (14.13-0ubuntu0.22.04.1) ...

Creating new PostgreSQL cluster 14/main ...

/usr/lib/postgresql/14/bin/initdb -D /var/lib/postgresql/14/main --auth-local peer --auth-host scram-sha-256 --no-instructions

The files belonging to this database system will be owned by user "postgres".

This user must also own the server process.

The database cluster will be initialized with locale "C.UTF-8".

The default database encoding has accordingly been set to "UTF8".

The default text search configuration will be set to "english".

Data page checksums are disabled.

fixing permissions on existing directory /var/lib/postgresql/14/main ... ok creating subdirectories ... ok selecting dynamic shared memory implementation ... posix selecting default max_connections ... 100 selecting default shared_buffers ... 128MB selecting default time zone ... Etc/UTC creating configuration files ... ok running bootstrap script ... ok performing post-bootstrap initialization ... ok

syncing data to disk ... ok

update-alternatives: using /usr/share/postgresql/14/man/man1/postmaster.1.gz to provide

/usr/share/man/man1/postmaster.1.gz (postmaster.1.gz) in auto mode

Setting up postgresql-contrib (14+238) ...

Setting up postgresql (14+238) ...

Processing triggers for man-db (2.10.2-1) ...

Processing triggers for libc-bin (2.35-0ubuntu3.8) ...

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.

ubuntu@ip-172-31-18-238:~\$ sudo -u postgres psq

sudo: psq: command not found

ubuntu@ip-172-31-18-238:~\$ sudo -u postgres psql

could not change directory to "/home/ubuntu": Permission denied

psql (14.13 (Ubuntu 14.13-0ubuntu0.22.04.1))

Type "help" for help.

postgres=# CREATE ROLE ubuntu WITH LOGIN PASSWORD '1234';

CREATE ROLE

postgres=# ALTER ROLE ubuntu CREATEDB;

ALTER ROLE

postgres=# \q

ubuntu@ip-172-31-18-238:~\$ pgbench -i -s 10 -U ubuntu testdb

pgbench: error: connection to server on socket "/var/run/postgresql/.s.PGSQL.5432"

failed: FATAL: database "testdb" does not exist

ubuntu@ip-172-31-18-238:~\$ pgbench -i -s 10 -U ubuntu testdb

pgbench: error: connection to server on socket "/var/run/postgresql/.s.PGSQL.5432"

failed: FATAL: database "testdb" does not exist

ubuntu@ip-172-31-18-238:~\$ sudo -u postgres psql

could not change directory to "/home/ubuntu": Permission denied

psql (14.13 (Ubuntu 14.13-0ubuntu0.22.04.1))

Type "help" for help.

postgres=# CREATE DATABASE testdb;

CREATE DATABASE

```
postgres=# CREATE ROLE ubuntu WITH LOGIN PASSWORD '1234';
ERROR: role "ubuntu" already exists
postgres=# \q
ubuntu@ip-172-31-18-238:~$ pgbench -i -s 10 -U ubuntu testdb
dropping old tables...
NOTICE: table "pgbench_accounts" does not exist, skipping
NOTICE: table "pgbench_branches" does not exist, skipping
NOTICE: table "pgbench_history" does not exist, skipping
NOTICE: table "pgbench_tellers" does not exist, skipping
creating tables...
generating data (client-side)...
1000000 of 1000000 tuples (100%) done (elapsed 1.30 s, remaining 0.00 s)
vacuuming...
creating primary keys...
done in 2.10 s (drop tables 0.00 s, create tables 0.01 s, client-side generate 1.33 s, vacuum
0.30 s, primary keys 0.46 s).
ubuntu@ip-172-31-18-238:~$ pgbench -c 10 -j 2 -t 1000 -U ubuntu testdb
pgbench (14.13 (Ubuntu 14.13-0ubuntu0.22.04.1))
starting vacuum...end.
transaction type: <builtin: TPC-B (sort of)>
scaling factor: 10
query mode: simple
number of clients: 10
number of threads: 2
number of transactions per client: 1000
number of transactions actually processed: 10000/10000
latency average = 4.486 ms
initial connection time = 16.091 ms
tps = 2229.136508 (without initial connection time)
ubuntu@ip-172-31-18-238:~$
ubuntu@ip-172-31-18-238:~$ pgbench -c 25 -j 5 -t 1000 -U ubuntu testdb
pgbench (14.13 (Ubuntu 14.13-0ubuntu0.22.04.1))
starting vacuum...end.
transaction type: <builtin: TPC-B (sort of)>
scaling factor: 10
query mode: simple
number of clients: 25
number of threads: 5
number of transactions per client: 1000
number of transactions actually processed: 25000/25000
latency average = 10.468 ms
initial connection time = 35.146 ms
tps = 2388.180836 (without initial connection time)
```

ubuntu@ip-172-31-18-238:~\$ pgbench -c 25 -j 2 -t 1000 -U ubuntu testdb

pgbench (14.13 (Ubuntu 14.13-0ubuntu0.22.04.1))

starting vacuum...end.

transaction type: <builtin: TPC-B (sort of)>

scaling factor: 10 query mode: simple number of clients: 25 number of threads: 2

number of transactions per client: 1000

number of transactions actually processed: 25000/25000

latency average = 10.953 ms

initial connection time = 39.613 ms

tps = 2282.488022 (without initial connection time)

ubuntu@ip-172-31-18-238:~\$ pgbench -c 50 -j 2 -t 1000 -U ubuntu testdb

pgbench (14.13 (Ubuntu 14.13-0ubuntu0.22.04.1))

starting vacuum...end.

transaction type: <builtin: TPC-B (sort of)>

scaling factor: 10 query mode: simple number of clients: 50 number of threads: 2

number of transactions per client: 1000

number of transactions actually processed: 50000/50000

latency average = 22.982 ms

initial connection time = 75.042 ms

tps = 2175.656028 (without initial connection time)

ubuntu@ip-172-31-18-238:~\$ exit

logout

Connection to ec2-34-234-79-241.compute-1.amazonaws.com closed.

(base) tahayasin@Tahas-MacBook-Pro Desktop %