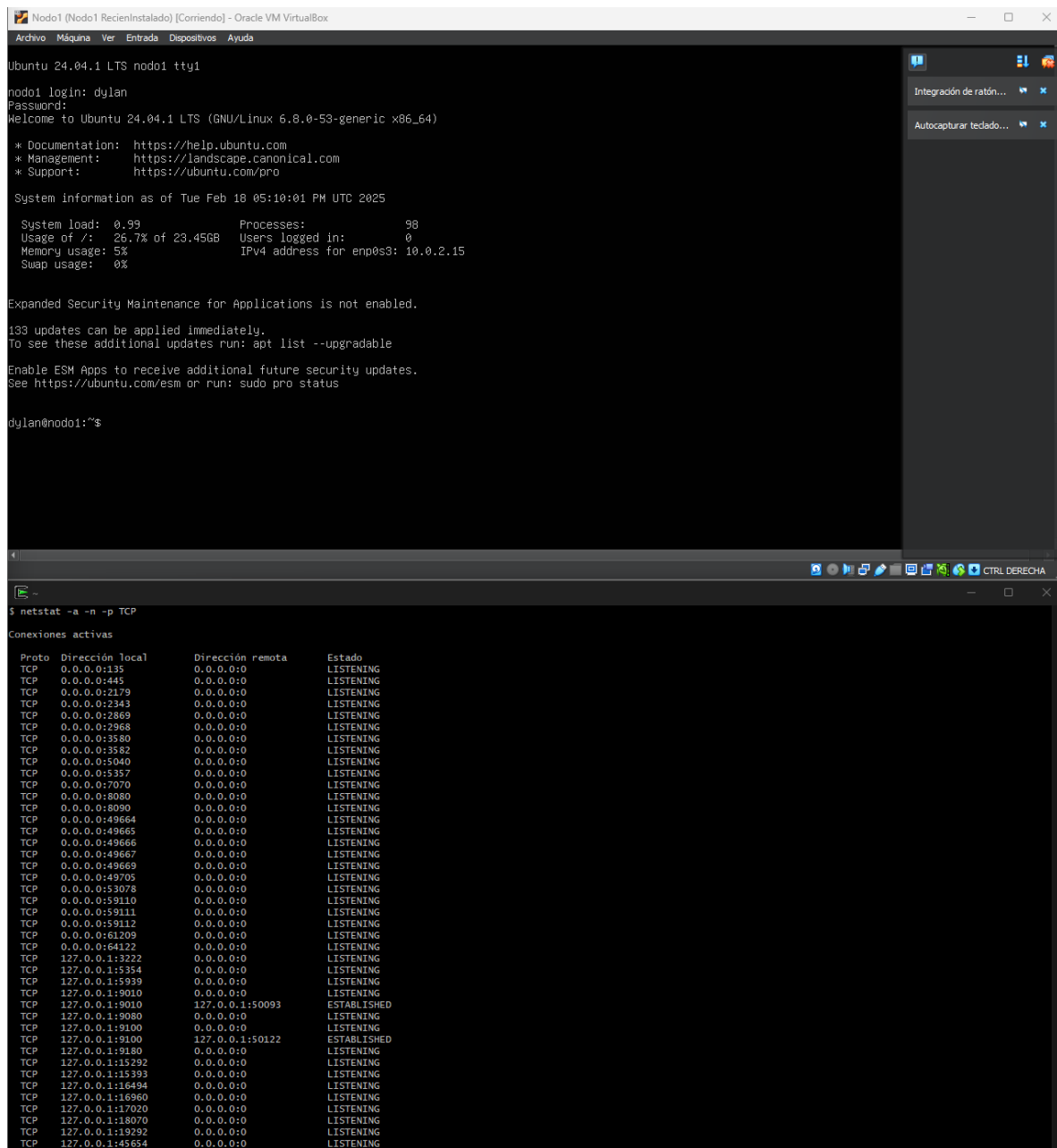


En este documento se demuestra el proceso de instalación y configuración de un clúster Galera 4 con MariaDB en un entorno Ubuntu Server, realizando pruebas de rendimiento utilizando sysbench. Debido a limitaciones en el entorno de pruebas, el clúster se configuró con un solo nodo.

Se montó EL Nodo 1 en Ubuntu Server



```
Nodo1 (Nodo1 Recien Instalado) [Corriendo] - Oracle VM VirtualBox
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda

Ubuntu 24.04.1 LTS nodo1 tty1

nodo1 login: dylan
Password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-53-generic x86_64)

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

System information as of Tue Feb 18 05:10:01 PM UTC 2025

System load:  0.99           Processes:    98
Usage of /:   26.7% of 23.45GB Users logged in: 0
Memory usage: 5%           IPv4 address for enp0s3: 10.0.2.15
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

133 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

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

dylan@nodo1:~$

$ netstat -a -n -p TCP

Conexiones activas

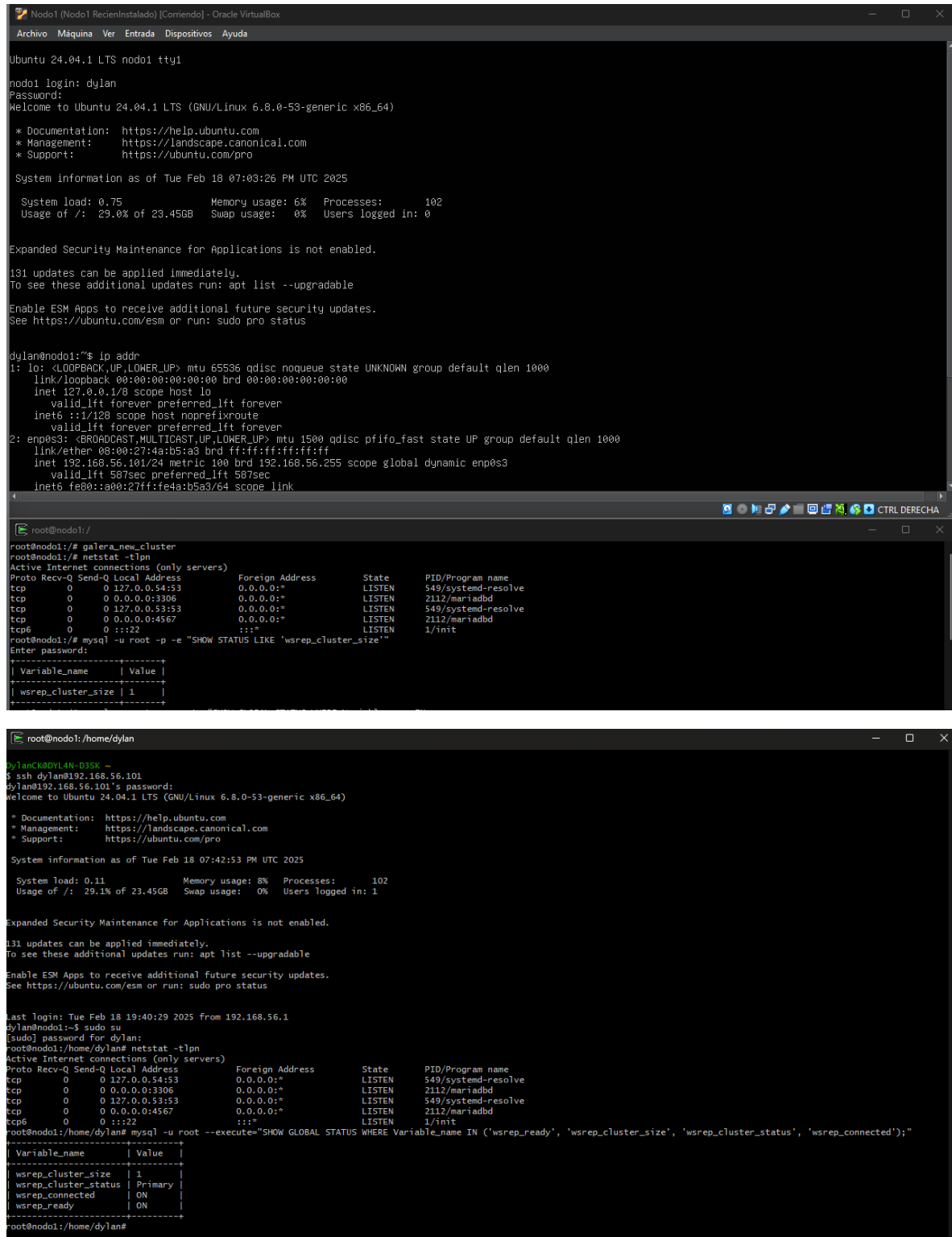
Proto Dirección local      Dirección remota      Estado
TCP    0.0.0.0:135           0.0.0.0:0             LISTENING
TCP    0.0.0.0:445           0.0.0.0:0             LISTENING
TCP    0.0.0.0:2179          0.0.0.0:0             LISTENING
TCP    0.0.0.0:2343          0.0.0.0:0             LISTENING
TCP    0.0.0.0:2869          0.0.0.0:0             LISTENING
TCP    0.0.0.0:2968          0.0.0.0:0             LISTENING
TCP    0.0.0.0:3580          0.0.0.0:0             LISTENING
TCP    0.0.0.0:3582          0.0.0.0:0             LISTENING
TCP    0.0.0.0:5040          0.0.0.0:0             LISTENING
TCP    0.0.0.0:5357          0.0.0.0:0             LISTENING
TCP    0.0.0.0:7070          0.0.0.0:0             LISTENING
TCP    0.0.0.0:8080          0.0.0.0:0             LISTENING
TCP    0.0.0.0:8090          0.0.0.0:0             LISTENING
TCP    0.0.0.0:49664         0.0.0.0:0             LISTENING
TCP    0.0.0.0:49665         0.0.0.0:0             LISTENING
TCP    0.0.0.0:49666         0.0.0.0:0             LISTENING
TCP    0.0.0.0:49667         0.0.0.0:0             LISTENING
TCP    0.0.0.0:49669         0.0.0.0:0             LISTENING
TCP    0.0.0.0:49705         0.0.0.0:0             LISTENING
TCP    0.0.0.0:53078         0.0.0.0:0             LISTENING
TCP    0.0.0.0:59110         0.0.0.0:0             LISTENING
TCP    0.0.0.0:59111         0.0.0.0:0             LISTENING
TCP    0.0.0.0:59112         0.0.0.0:0             LISTENING
TCP    0.0.0.0:61209         0.0.0.0:0             LISTENING
TCP    0.0.0.0:64122         0.0.0.0:0             LISTENING
TCP    127.0.0.1:3222        0.0.0.0:0             LISTENING
TCP    127.0.0.1:5354        0.0.0.0:0             LISTENING
TCP    127.0.0.1:5939        0.0.0.0:0             LISTENING
TCP    127.0.0.1:9010        0.0.0.0:0             LISTENING
TCP    127.0.0.1:9010        127.0.0.1:50093       ESTABLISHED
TCP    127.0.0.1:9080        0.0.0.0:0             LISTENING
TCP    127.0.0.1:9100        0.0.0.0:0             LISTENING
TCP    127.0.0.1:9100        127.0.0.1:50122       ESTABLISHED
TCP    127.0.0.1:9180        0.0.0.0:0             LISTENING
TCP    127.0.0.1:135292      0.0.0.0:0             LISTENING
TCP    127.0.0.1:135393      0.0.0.0:0             LISTENING
TCP    127.0.0.1:16494       0.0.0.0:0             LISTENING
TCP    127.0.0.1:16960       0.0.0.0:0             LISTENING
TCP    127.0.0.1:17020       0.0.0.0:0             LISTENING
TCP    127.0.0.1:18070       0.0.0.0:0             LISTENING
TCP    127.0.0.1:19292       0.0.0.0:0             LISTENING
TCP    127.0.0.1:45654       0.0.0.0:0             LISTENING
```

Antes de instalar cualquier software, es recomendable actualizar la lista de paquetes y asegurarse de que el sistema tenga las últimas versiones de los paquetes disponibles.

Esto garantizará que todas las dependencias estén actualizadas antes de la instalación.

Para instalar MariaDB en Ubuntu, usa el siguiente comando:

```
sudo apt install mariadb-server
```



```
Nodo1 (Nodo1 Recien Instalado) [Corriendo] - Oracle VirtualBox
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda

Ubuntu 24.04.1 LTS nodo1 tty1

nodo1 login: dylan
Password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-53-generic x86_64)

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

System information as of Tue Feb 18 07:03:26 PM UTC 2025

System load: 0.75      Memory usage: 6%    Processes:   102
Usage of /: 29.0% of 23.45GB Swap usage:  0%    Users logged in: 0

Expanded Security Maintenance for Applications is not enabled.

131 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

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

dylan@nodo1:~$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:4a:b5:a3 brd ff:ff:ff:ff:ff:ff
    inet 192.168.56.101/24 metric 100 brd 192.168.56.255 scope global dynamic enp0s3
        valid_lft 587sec preferred_lft 587sec
    inet6 fe80::a00:27ff:fe4a:b5a3/64 scope link

root@nodo1:~# galera_new_cluster
root@nodo1:~# netstat -tlnp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:54:53          0.0.0.0:*               LISTEN      549/systemd-resolve
tcp        0      0 0.0.0.0:3306           0.0.0.0:*               LISTEN      2112/mariadb
tcp        0      0 0.0.0.0:53:53          0.0.0.0:*               LISTEN      549/systemd-resolve
tcp        0      0 0.0.0.0:4567           0.0.0.0:*               LISTEN      2112/mariadb
tcp6       0      0 :::22                  :::*                   LISTEN      1/init

root@nodo1:~# mysql -u root -p -e "SHOW STATUS LIKE 'wsrep_cluster_size'"
Enter password:
+-----+
| Variable_name | Value |
+-----+
| wsrep_cluster_size | 1 |
+-----+

dylan@nodo1:~$ ssh dylan@192.168.56.101
dylan@192.168.56.101's password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-53-generic x86_64)

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

System information as of Tue Feb 18 07:42:53 PM UTC 2025

System load: 0.11      Memory usage: 8%    Processes:   102
Usage of /: 29.1% of 23.45GB Swap usage:  0%    Users logged in: 1

Expanded Security Maintenance for Applications is not enabled.

131 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

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

Last login: Tue Feb 18 19:40:29 2025 from 192.168.56.1
dylan@nodo1:~$ sudo su
[sudo] password for dylan:
root@nodo1:/home/dylan# netstat -tlnp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:54:53          0.0.0.0:*               LISTEN      549/systemd-resolve
tcp        0      0 0.0.0.0:3306           0.0.0.0:*               LISTEN      2112/mariadb
tcp        0      0 0.0.0.0:53:53          0.0.0.0:*               LISTEN      549/systemd-resolve
tcp        0      0 0.0.0.0:4567           0.0.0.0:*               LISTEN      2112/mariadb
tcp6       0      0 :::22                  :::*                   LISTEN      1/init

root@nodo1:/home/dylan# mysql -u root --execute="SHOW GLOBAL STATUS WHERE Variable_name IN ('wsrep_ready', 'wsrep_cluster_size', 'wsrep_cluster_status', 'wsrep_connected');"
+-----+
| Variable_name | Value |
+-----+
| wsrep_cluster_size | 1 |
| wsrep_cluster_status | Primary |
| wsrep_connected | ON |
| wsrep_ready | ON |
+-----+
root@nodo1:/home/dylan#
```

Después de la instalación, es importante comprobar que el servicio de MariaDB está funcionando correctamente. En estas imágenes se puede ver como la base de datos esta activa

```

root@nodol1:/home/dylan# netstat -tlnp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address          Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:54:53         0.0.0.0:*               LISTEN      549/system-resolve
tcp        0      0 0.0.0.0:3306          0.0.0.0:*               LISTEN      2112/mariadb
tcp        0      0 0.0.0.0:54:53         0.0.0.0:*               LISTEN      549/system-resolve
tcp        0      0 0.0.0.0:4567          0.0.0.0:*               LISTEN      2112/mariadb
tcp6       0      0 :::22                 :::*                    LISTEN      1/init

root@nodol1:/home/dylan# mysql -u root --execute="SHOW GLOBAL STATUS WHERE Variable_name IN ('wsrep_ready', 'wsrep_cluster_size', 'wsrep_cluster_status', 'wsrep_connected');"
+-----+-----+
| Variable_name | Value |
+-----+-----+
| wsrep_cluster_size | 1 |
| wsrep_cluster_status | Primary |
| wsrep_connected | ON |
| wsrep_ready | ON |
+-----+-----+

root@nodol1:/home/dylan# systemctl status mysql
● mariadb.service - MariaDB 10.11.8 database server
   Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; preset: enabled)
   Active: active (running) since Tue 2025-02-18 19:30:35 UTC; 19mn ago
     Docs: man:mariadb(8)
           https://mariadb.com/kb/en/library/systemd/
   Process: 1965 ExecStartPre=/usr/bin/install -m 755 -o mysql -g root -d /var/run/mysql (code=exited, status=0/SUCCESS)
   Process: 1967 ExecStartPre=/bin/sh -c systemctl unset-environment _WSREP_START_POSITION (code=exited, status=0/SUCCESS)
   Process: 1969 ExecStartPre=/bin/sh -c [ ! -e /usr/bin/galera_recovery ] && VAR= || VAR= cd /usr/bin/; /usr/bin/galera_recovery; [ $? -eq 0 ] && systemctl set-environment
   Process: 2129 ExecStartPost=/bin/sh -c systemctl unset-environment _WSREP_START_POSITION (code=exited, status=0/SUCCESS)
   Process: 2131 ExecStartPost=/etc/mysql/debian-start (code=exited, status=0/SUCCESS)
   Main PID: 2112 (mariadb)
   Status: "Taking your SQL requests now..."
   Tasks: 15 (limit: 34384)
   Memory: 113.8M (peak: 116.4M)
   CPU: 1.704s
   CGroup: /system.slice/mariadb.service
           └─2112 /usr/sbin/mariadb --wsrep-new-cluster --wsrep_start_position=00000000-0000-0000-0000-000000000000:1

Feb 18 19:30:35 nodol1 mariadb[2112]: 2025-02-18 19:30:35 2 [Note] WSREP: Server nodol1 synced with group
Feb 18 19:30:35 nodol1 mariadb[2112]: 2025-02-18 19:30:35 2 [Note] WSREP: Server status change joined -> synced
Feb 18 19:30:35 nodol1 mariadb[2112]: 2025-02-18 19:30:35 2 [Note] WSREP: Synchronized with group, ready for connections
Feb 18 19:30:35 nodol1 mariadb[2112]: 2025-02-18 19:30:35 2 [Note] WSREP: wsrep_notify_cmd is not defined, skipping notification.
Feb 18 19:30:35 nodol1 systemd[1]: Started mariadb.service - MariaDB 10.11.8 database server.
Feb 18 19:30:35 nodol1 /etc/mysql/debian-start[2135]: Upgrading MariaDB tables if necessary.
Feb 18 19:30:35 nodol1 /etc/mysql/debian-start[2146]: Checking for insecure root accounts.
Feb 18 19:30:35 nodol1 /etc/mysql/debian-start[2150]: Triggering myisam-recover for all MyISAM tables and aria-recover for all Aria tables
Feb 18 19:41:32 nodol1 mariadb[2112]: 2025-02-18 19:41:32 37 [Warning] Access denied for user 'root'@'localhost'
Feb 18 19:41:40 nodol1 mariadb[2112]: 2025-02-18 19:41:40 38 [Warning] Access denied for user 'root'@'localhost'
lines 1-28/28 (END)

```

```

root@nodol1:/home/dylan# top - 20:01:33 up 8 min, 2 users, load average: 0.02, 0.06, 0.05
tasks: 113 total, 1 running, 108 sleeping, 4 stopped, 0 zombie
Cpu(s):  0.0 us, 10.0 sy,  0.0 ni, 90.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
Mem:   4414.4 total, 3813.6 free, 556.1 used, 262.8 buff/cache
Swap:  4096.0 total, 4096.0 free,  0.0 used, 3858.3 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR   S  %CPU  %MEM     time+ COMMAND
    1 root        0   20 22284    0      0   S   0.3   0.0   0:02.48 systemd
    2 root        0   20      0      0      0   S   0.0   0.0   0:00.00 kthreadd
    3 root        0   20      0      0      0   S   0.0   0.0   0:00.00 pool_workqueue_release
    4 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-rcu_g
    5 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-rcu_p
    6 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-slub
    7 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-nets
    8 root        0   20      0      0      0   I   0.0   0.0   0:02.29 kworker/0:0-events
   11 root        0   20      0      0      0   I   0.0   0.0   0:00.25 kworker/u2:0-events_power_efficient
   12 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-mm_pe
   13 root        0   20      0      0      0   I   0.0   0.0   0:00.00 rcu_tasks_kthread
   14 root        0   20      0      0      0   I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
   15 root        0   20      0      0      0   I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
   16 root        0   20      0      0      0   S   0.0   0.0   0:00.14 ksoftirqd/0
   17 root        0   20      0      0      0   I   0.0   0.0   0:00.10 rcu_preempt
   18 root        0   20      0      0      0   S   0.0   0.0   0:00.00 migration/0
   19 root       -1   20      0      0      0   S   0.0   0.0   0:00.00 idle_inject/0
   20 root        0   20      0      0      0   S   0.0   0.0   0:00.00 cpuhp/0
   21 root        0   20      0      0      0   S   0.0   0.0   0:00.00 kdevtmpfs
   22 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-inet_
   23 root        0   20      0      0      0   I   0.0   0.0   0:00.73 kworker/u2:1-events_unbound
   24 root        0   20      0      0      0   S   0.0   0.0   0:00.00 kauditd
   25 root        0   20      0      0      0   S   0.0   0.0   0:00.00 khungtaskd
   26 root        0   20      0      0      0   S   0.0   0.0   0:00.00 oom_reaper
   27 root        0   20      0      0      0   I   0.0   0.0   0:00.04 kworker/u2:2-events_power_efficient
   28 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-write
   29 root        0   20      0      0      0   S   0.0   0.0   0:00.03 kcompactd0
   30 root        0  25   5      0      0      0   S   0.0   0.0   0:00.00 ksmd
   31 root       39  19      0      0      0   S   0.0   0.0   0:00.00 khugepaged
   32 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-kinte
   33 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-kbloc
   34 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-blkg
   35 root       -51   0      0      0      0   S   0.0   0.0   0:00.00 irq/psci
   36 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-tpm_d
   37 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-ata_s
   38 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-md
   39 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-md_bi
   40 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-sdca-
   41 root        0  -20      0      0      0   I   0.0   0.0   0:00.00 kworker/R-devfr
   42 root       -51   0      0      0      0   S   0.0   0.0   0:00.00 watchdogd

```

Se creó una base de datos de prueba y se insertaron datos para verificar su funcionalidad:

Se utilizó sysbench para evaluar el rendimiento del nodo en distintas operaciones de base de datos.

```

root@nodol: /home/dylan
hange joined -> synced
th group, ready for connections
d is not defined, skipping notification.
ady for connections.
: '/run/mysqld/mysqld.sock' port: 3306 Ubuntu 24.04
er.
y.

[lines 1-28/28 (END)]
[1]~ Stopped                  systemctl status mariadb.service
log files sysbench
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Reading the script from the standard input:
AC
root@nodol:/home/dylan# sysbench --threads=1 --db-driver=mysql --mysql-user=root --events=0 oltp_read_only prepare
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

invalid option: --mysql-user=root
root@nodol:/home/dylan# sysbench --threads=1 --db-driver=mysql --mysql-user=root --events=0 oltp_read_only prepare
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

FATAL: unable to connect to MySQL server on host 'localhost', port 3306, aborting...
FATAL: error 1049: Unknown database 'sbtest'
FATAL: 'sysbench.cmdline.call_command' function failed: /usr/share/sysbench/oltp_common.lua:83: connection creation failed
root@nodol:/home/dylan# mysql -uroot -p -e "create database sbtest"
Enter password:
root@nodol:/home/dylan# ~

```

Se ejecutaron pruebas utilizando 1 y 2 cores para medir el número de transacciones soportadas en 1 minuto.

Inicie las Pruebas de Sysbench con 1 Core

➤ oltp_read_only

```

Nodo1 (Nodo1 Recien Instalado) [Corriendo] - Oracle VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda
top - 02:15:53 up 40 min, 2 users, load average: 0.31, 0.33, 0.17
Tasks: 108 total, 1 running, 105 sleeping, 2 stopped, 0 zombie
%Cpu(s): 22.2 us, 10.0 sy, 0.0 ni, 0.0 id, 0.0 wa, 0.0 hi, 67.8 si, 0.0 st
MiB Mem : 4414.5 total, 3623.2 free, 576.3 used, 437.0 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3888.2 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR  S  %CPU  %MEM     TIME+ COMMAND
 1535 mysql    20   0 1279584 156292 33536 S   75.1   3.5   2:10.07 mariadbd
 1698 root      20   0  99492   14208 11264 S   24.3   0.3   0:12.67 sysbench
 1659 root      20   0   0       0       0 I   0.3   0.0   0:01.47 kworker/0:0-events
    1 root      20   0 22264   13400  9432 S    0.0   0.3   0:02.43 systemd
    2 root      20   0   0       0       0 S    0.0   0.0   0:00.00 kthreadd
    3 root      20   0   0       0       0 S    0.0   0.0   0:00.00 pool_workqueue_release
    4 root      0 -20   0       0       0 I   0.0   0.0   0:00.00 kworker/R-rcu_g
    5 root      0 -20   0       0       0 I   0.0   0.0   0:00.00 kworker/R-rcu_p
    6 root      0 -20   0       0       0 I   0.0   0.0   0:00.00 kworker/R-slub_
    7 root      0 -20   0       0       0 I   0.0   0.0   0:00.00 kworker/R-netns
   12 root      0 -20   0       0       0 I   0.0   0.0   0:00.00 kworker/R-mm_pe
   13 root      20   0   0       0       0 I   0.0   0.0   0:00.00 rcu_tasks_kthread
   14 root      20   0   0       0       0 I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
   15 root      20   0   0       0       0 I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
   16 root      20   0   0       0       0 S    0.0   0.0   0:00.29 ksoftirqd/0
   17 root      20   0   0       0       0 I   0.0   0.0   0:00.12 rcu_preempt
   18 root      rt    0   0       0       0 S    0.0   0.0   0:00.02 migration/0
   19 root     -51   0   0       0       0 S    0.0   0.0   0:00.00 idle_inject/0
   20 root      20   0   0       0       0 S    0.0   0.0   0:00.00 cpuhp/0
   21 root      20   0   0       0       0 S    0.0   0.0   0:00.00 kdevtmpfs
   22 root      0 -20   0       0       0 I   0.0   0.0   0:00.00 kworker/R-inet_
   24 root      20   0   0       0       0 S    0.0   0.0   0:00.00 kauditd
   25 root      20   0   0       0       0 S    0.0   0.0   0:00.00 khungtaskd
   26 root      20   0   0       0       0 S    0.0   0.0   0:00.00 oom_reaper
   28 root      0 -20   0       0       0 I   0.0   0.0   0:00.00 kworker/R-write
   29 root      20   0   0       0       0 S    0.0   0.0   0:00.13 kcompactd0
   30 root      25   5   0       0       0 S    0.0   0.0   0:00.00 ksmd
   31 root      39  19   0       0       0 S    0.0   0.0   0:00.00 khugepaged
   32 root      0 -20   0       0       0 I   0.0   0.0   0:00.00 kworker/R-kinte
   33 root      0 -20   0       0       0 I   0.0   0.0   0:00.00 kworker/R-kbloc
   34 root      0 -20   0       0       0 I   0.0   0.0   0:00.00 kworker/R-bkcg

```

```
root@nodol1:/home/dylan
max: 105.63
95th percentile: 0.06
sum: 59547.36

Threads fairness:
  events (avg/stddev): 1007442.0000/0.00
  execution time (avg/stddev): 59.5474/0.00

root@nodol1:/home/dylan# sysbench --threads=1 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 o1tp_read_only run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read: 1013600
    write: 0
    others: 144800
    total: 1158400
  transactions: 72400 (1206.57 per sec.)
  queries: 1158400 (19305.16 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total time: 60.0003s
  total number of events: 72400

Latency (ms):
  min: 0.57
  avg: 0.83
  max: 19.20
  95th percentile: 2.61
  sum: 59899.91

Threads fairness:
  events (avg/stddev): 72400.0000/0.00
  execution time (avg/stddev): 59.8999/0.00

root@nodol1:/home/dylan#
```

➤ o1tp_delete

```
Nodol1 (Nodo1 Recien Instalado) [Corriendo] - Oracle VirtualBox

Archivo Máquina Ver Entrada Dispositivos Ayuda
top - 02:16:59 up 41 min, 2 users, load average: 0.52, 0.33, 0.18
Tasks: 108 total, 1 running, 105 sleeping, 2 stopped, 0 zombie
%Cpu(s): 19.4 us, 14.0 sy, 0.0 ni, 0.0 id, 1.1 wa, 0.0 hi, 65.6 si, 0.0 st
MiB Mem : 4414.5 total, 3623.2 free, 576.2 used, 437.2 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3838.3 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR   S   %CPU  %MEM     TIME+ COMMAND
1535 mysql    20   0 1279584 156420 33664 S   74.0   3.5   2:26.20 mariadbd
1703 root      20   0  99364 13952 11264 S   24.3   0.3   0:03.05 sysbench
1659 root      20   0      0      0      0 I    0.3   0.0   0:01.58 kworker/0:0-mm_percpu_wq
1 root      20   0 22264 13400  9432 S    0.0   0.3   0:02.43 systemd
2 root      20   0      0      0      0 S    0.0   0.0   0:00.00 kthreadd
3 root      20   0      0      0      0 S    0.0   0.0   0:00.00 pool_workqueue_release
4 root      0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-rcu_g
5 root      0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-rcu_p
6 root      0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-slub_
7 root      0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-netns
12 root     0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-mm_pe
13 root      20   0      0      0      0 I    0.0   0.0   0:00.00 rcu_tasks_kthread
14 root      20   0      0      0      0 I    0.0   0.0   0:00.00 rcu_tasks_rude_kthread
15 root      20   0      0      0      0 I    0.0   0.0   0:00.00 rcu_tasks_trace_kthread
16 root      20   0      0      0      0 S    0.0   0.0   0:00.31 ksortirqd/0
17 root      20   0      0      0      0 I    0.0   0.0   0:00.12 rcu_preempt
18 root      rt   0      0      0      0 S    0.0   0.0   0:00.02 migration/0
19 root     -51   0      0      0      0 S    0.0   0.0   0:00.00 idle_inject/0
20 root      20   0      0      0      0 S    0.0   0.0   0:00.00 cpuhp/0
21 root      20   0      0      0      0 S    0.0   0.0   0:00.00 kdevtmpfs
22 root      0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-inet_
24 root      20   0      0      0      0 S    0.0   0.0   0:00.00 kauditd
25 root      20   0      0      0      0 S    0.0   0.0   0:00.00 khungtaskd
26 root      20   0      0      0      0 S    0.0   0.0   0:00.00 oom_reaper
28 root      0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-write
29 root      20   0      0      0      0 S    0.0   0.0   0:00.13 kcompactd0
30 root      25   5      0      0      0 S    0.0   0.0   0:00.00 ksmd
31 root      39  19      0      0      0 S    0.0   0.0   0:00.00 khugepaged
32 root      0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-kinte
33 root      0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-kbldc
34 root      0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-blkcg
```

```
root@nodo1:/home/dylan#
max: 19.20
95th percentile: 2.61
sum: 59899.91

Threads fairness:
  events (avg/stddev): 72400.0000/0.00
  execution time (avg/stddev): 59.8999/0.00

root@nodo1:/home/dylan# sysbench --threads=1 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 o1tp_delete run
sysbench 1.0.20 (using system LuaJIT 2.1.0-betas)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read: 0
    write: 351
    other: 1216043
    total: 1216394
  transactions: 1216394 (20272.55 per sec.)
  queries: 1216394 (20272.55 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total time: 60.0000s
  total number of events: 1216394

Latency (ms):
  min: 0.03
  avg: 0.05
  max: 15.42
  95th percentile: 0.06
  sum: 59463.21

Threads fairness:
  events (avg/stddev): 1216394.0000/0.00
  execution time (avg/stddev): 59.4632/0.00

root@nodo1:/home/dylan#
```

➤ o1tp_insert

```
Nodo1 (Nodo1 Recien Instalado) [Corriendo] - Oracle VirtualBox
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda

top - 02:19:08 up 43 min,  2 users,  load average: 0.39, 0.38, 0.22
Tasks: 108 total,   2 running, 104 sleeping,   2 stopped,   0 zombie
%Cpu(s):  0.0 us, 42.2 sy,   0.0 ni,   0.0 id, 54.8 wa,   0.0 hi,   3.0 si,   0.0 st
MiB Mem : 4414.5 total, 3612.9 free,  577.9 used,  445.9 buff/cache
MiB Swap: 4096.0 total, 4096.0 free,   0.0 used, 3836.6 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR   S   %CPU  %MEM    TIME+  COMMAND
 1535 mysql     20   0 1279584 161412 37376  S   32.3   3.6   3:04.72 mariadb
   43 root      -20   0     0     0     0   I    5.7   0.0   0:01.96 kworker/0:1H-kblockd
 230 root      20   0     0     0     0   D    2.7   0.0   0:00.67 jbd2/dm-0-8
 1711 root      20   0  99620  13952 11136  S    1.7   0.3   0:00.16 sysbench
 1659 root      20   0     0     0     0   R    0.7   0.0   0:01.87 kworker/0:0-kdmflush/252:0
 352 root      rt   0 289116  27392  8784  S    0.3   0.5   0:00.33 multipathd
    1 root      20   0  22264  13400  9432  S    0.0   0.3   0:02.43 systemd
    2 root      20   0     0     0     0   S    0.0   0.0   0:00.00 kthread
    3 root      20   0     0     0     0   S    0.0   0.0   0:00.00 pool_workqueue_release
   4 root      0-20   0     0     0     0   I    0.0   0.0   0:00.00 kworker/R-rcu_g
   5 root      0-20   0     0     0     0   I    0.0   0.0   0:00.00 kworker/R-rcu_p
   6 root      0-20   0     0     0     0   I    0.0   0.0   0:00.00 kworker/R-slab_
   7 root      0-20   0     0     0     0   I    0.0   0.0   0:00.00 kworker/R-netns
  12 root      0-20   0     0     0     0   I    0.0   0.0   0:00.00 kworker/R-mm_pe
  13 root      20   0     0     0     0   I    0.0   0.0   0:00.00 rcu_tasks_kthread
  14 root      20   0     0     0     0   I    0.0   0.0   0:00.00 rcu_tasks_rude_kthread
  15 root      20   0     0     0     0   I    0.0   0.0   0:00.00 rcu_tasks_trace_kthread
  16 root      20   0     0     0     0   S    0.0   0.0   0:00.34 ksoftirqd/0
  17 root      20   0     0     0     0   I    0.0   0.0   0:00.12 rcu_preempt
  18 root      rt   0     0     0     0   S    0.0   0.0   0:00.02 migration/0
  19 root     -51   0     0     0     0   S    0.0   0.0   0:00.00 idle_inject/0
  20 root      20   0     0     0     0   S    0.0   0.0   0:00.00 cpuhp/0
  21 root      20   0     0     0     0   S    0.0   0.0   0:00.00 kdevtmpfs
  22 root      0-20   0     0     0     0   I    0.0   0.0   0:00.00 kworker/R-inet_
  24 root      20   0     0     0     0   S    0.0   0.0   0:00.00 kauditd
  25 root      20   0     0     0     0   S    0.0   0.0   0:00.00 khungtaskd
  26 root      20   0     0     0     0   S    0.0   0.0   0:00.00 oom_reaper
  28 root      0-20   0     0     0     0   I    0.0   0.0   0:00.00 kworker/R-write
  29 root      20   0     0     0     0   S    0.0   0.0   0:00.14 kcompactd0
  30 root      25   5     0     0     0   S    0.0   0.0   0:00.00 ksmd
  31 root      39  19     0     0     0   S    0.0   0.0   0:00.00 khugepaged
```

```
root@nodo1:/home/dylan#
max: 15.42
95th percentile: 0.06
sum: 59463.21

Threads fairness:
  events (avg/stddev): 1216394.0000/0.00
  execution time (avg/stddev): 59.4632/0.00

root@nodo1:/home/dylan# sysbench --threads=1 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 oltp_insert run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read: 0
    write: 30229
    other: 0
    total: 30229
  transactions: 30229 (503.79 per sec.)
  queries: 30229 (503.79 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total time: 60.0009s
  total number of events: 30229

Latency (ms):
  min: 1.24
  avg: 1.98
  max: 28.24
  95th percentile: 4.49
  sum: 59919.34

Threads fairness:
  events (avg/stddev): 30229.0000/0.00
  execution time (avg/stddev): 59.9193/0.00

root@nodo1:/home/dylan#
```

➤ oltp_point_select

```
Nodo1 (Nodo1 Recien Instalado) [Corriendo] - Oracle VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda

top - 02:21:36 up 46 min, 2 users, load average: 0.37, 0.44, 0.27
Tasks: 111 total, 1 running, 108 sleeping, 2 stopped, 0 zombie
%Cpu(s): 20.2 us, 12.8 sy, 0.0 ni, 0.0 id, 0.0 wa, 0.0 hi, 67.0 si, 0.0 st
MiB Mem : 4414.5 total, 3568.3 free, 584.5 used, 484.3 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3829.9 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR  S  %CPU  %MEM     TIME+ COMMAND
 1535 mysql     20   0 1279584 183172 54272 S  74.1   4.1   3:24.18 mariadb
 1722 root       20   0  99364 13952 11264 S  25.6   0.3   0:01.48 sysbench
 1649 root       20   0 11944 5888 3712 R   0.3   0.1   0:01.28 top
 1659 root       20   0   0 0 0 I   0.3   0.0   0:02.41 kworker/0:0-events
    1 root       20   0 22264 13400 9432 S   0.0   0.3   0:02.43 systemd
    2 root       20   0   0 0 0 S   0.0   0.0   0:00.00 kthreadd
    3 root       20   0   0 0 0 S   0.0   0.0   0:00.00 pool_workqueue_release
    4 root       0 -20   0 0 0 I   0.0   0.0   0:00.00 kworker/R-rcu_g
    5 root       0 -20   0 0 0 I   0.0   0.0   0:00.00 kworker/R-rcu_p
    6 root       0 -20   0 0 0 I   0.0   0.0   0:00.00 kworker/R-slab
    7 root       0 -20   0 0 0 I   0.0   0.0   0:00.00 kworker/R-netns
   12 root       0 -20   0 0 0 I   0.0   0.0   0:00.00 kworker/R-mm_pg
   13 root       20   0   0 0 0 I   0.0   0.0   0:00.00 rcu_tasks_kthread
   14 root       20   0   0 0 0 I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
   15 root       20   0   0 0 0 I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
   16 root       20   0   0 0 0 S   0.0   0.0   0:00.35 ksoftirqd/0
   17 root       20   0   0 0 0 I   0.0   0.0   0:00.12 rcu_preempt
   18 root      rt   0   0 0 0 S   0.0   0.0   0:00.03 migration/0
   19 root      -51  0   0 0 0 S   0.0   0.0   0:00.00 idle_inject/0
   20 root       20   0   0 0 0 S   0.0   0.0   0:00.00 cpuhp/0
   21 root       20   0   0 0 0 S   0.0   0.0   0:00.00 kdevtmpfs
   22 root       0 -20   0 0 0 I   0.0   0.0   0:00.00 kworker/R-inet_
   24 root       20   0   0 0 0 S   0.0   0.0   0:00.00 kauditd
   25 root       20   0   0 0 0 S   0.0   0.0   0:00.00 khungtaskd
   26 root       20   0   0 0 0 S   0.0   0.0   0:00.00 oom_reaper
   28 root       0 -20   0 0 0 I   0.0   0.0   0:00.00 kworker/R-write
   29 root       20   0   0 0 0 S   0.0   0.0   0:00.14 kcompactd0
   30 root       25   5   0 0 0 S   0.0   0.0   0:00.00 ksmd
   31 root       39  19   0 0 0 S   0.0   0.0   0:00.00 khugepaged
   32 root       0 -20   0 0 0 I   0.0   0.0   0:00.00 kworker/R-kinte
   33 root       0 -20   0 0 0 I   0.0   0.0   0:00.00 kworker/R-kbloc
```

```

root@nodol1:/home/dylan
max: 28.24
95th percentile: 4.49
sum: 59919.34

threads fairness:
  events (avg/stddev): 30229.0000/0.00
  execution time (avg/stddev): 59.9193/0.00

root@nodol1:/home/dylan# sysbench --threads=1 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 oltp_point_select run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
number of threads: 1
initializing random number generator from current time

initializing worker threads...
threads started!

OL statistics:
  queries performed:
    read: 1164168
    write: 0
    other: 0
    total: 1164168
  transactions: 1164168 (19402.00 per sec.)
  queries: 1164168 (19402.00 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total time: 60.0007s
  total number of events: 1164168

latency (ms):
  min: 0.03
  avg: 0.05
  max: 13.58
  95th percentile: 0.06
  sum: 59484.88

threads fairness:
  events (avg/stddev): 1164168.0000/0.00
  execution time (avg/stddev): 59.4849/0.00

root@nodol1:/home/dylan#

```

➤ oltp_read_write

```

Nodo1 [Nodo1 Recien Instalado] [Corriendo] - Oracle VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda
top - 02:23:42 up 48 min, 2 users, load average: 0.41, 0.51, 0.33
Tasks: 111 total, 2 running, 107 sleeping, 2 stopped, 0 zombie
%Cpu(s): 2.6 us, 46.4 sy, 0.0 ni, 0.0 id, 26.8 wa, 0.0 hi, 24.2 si, 0.0 st
MiB Mem : 4414.5 total, 3562.2 free, 585.4 used, 469.7 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3829.1 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR  S  %CPU  %MEM     TIME+ COMMAND
 1535 mysql    20   0 1279584 186884 56704 S  49.3   4.1  4:07.36 mariadbd
 1724 root      20   0 99492    14208 11264 S   7.3   0.3   0:00.45 sysbench
   43 root      0 -20     0     0     0  I   4.3   0.0   0:04.93 kworker/0:1H-kblockd
  230 root      20   0     0     0     0  R   2.7   0.0   0:02.13 jbd2/dm-0-8
 1659 root      20   0     0     0     0  I   1.0   0.0   0:02.67 kworker/0:0-kdmflush/252:0
 1649 root      20   0 11944    5888 3712 R   0.3   0.1   0:01.37 top
    1 root      20   0 22264    13400 9432 S   0.0   0.3   0:02.43 systemd
    2 root      20   0     0     0     0  S   0.0   0.0   0:00.00 kthreadd
    3 root      20   0     0     0     0  S   0.0   0.0   0:00.00 pool_workqueue_release
    4 root      0 -20     0     0     0  I   0.0   0.0   0:00.00 kworker/R-rcu_g
    5 root      0 -20     0     0     0  I   0.0   0.0   0:00.00 kworker/R-rcu_p
    6 root      0 -20     0     0     0  I   0.0   0.0   0:00.00 kworker/R-slab_
    7 root      0 -20     0     0     0  I   0.0   0.0   0:00.00 kworker/R-netns
   12 root      0 -20     0     0     0  I   0.0   0.0   0:00.00 kworker/R-nm_pe
   13 root      20   0     0     0     0  I   0.0   0.0   0:00.00 rcu_tasks_kthread
   14 root      20   0     0     0     0  I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
   15 root      20   0     0     0     0  I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
   16 root      20   0     0     0     0  S   0.0   0.0   0:00.39 ksoftirqd/0
   17 root      20   0     0     0     0  I   0.0   0.0   0:00.12 rcu_preempt
   18 root      rt    0     0     0     0  S   0.0   0.0   0:00.03 migration/0
   19 root      -51   0     0     0     0  S   0.0   0.0   0:00.00 idle_inject/0
   20 root      20   0     0     0     0  S   0.0   0.0   0:00.00 cpuhp/0
   21 root      20   0     0     0     0  S   0.0   0.0   0:00.00 kdevtmpfs
   22 root      0 -20     0     0     0  I   0.0   0.0   0:00.00 kworker/R-inet_
   24 root      20   0     0     0     0  S   0.0   0.0   0:00.00 kauditd
   25 root      20   0     0     0     0  S   0.0   0.0   0:00.00 khungtaskd
   26 root      20   0     0     0     0  S   0.0   0.0   0:00.00 oom_reaper
   28 root      0 -20     0     0     0  I   0.0   0.0   0:00.00 kworker/R-urite
   29 root      20   0     0     0     0  S   0.0   0.0   0:00.15 kcompactd0
   30 root      25   5     0     0     0  S   0.0   0.0   0:00.00 ksmd
   31 root      39  19     0     0     0  S   0.0   0.0   0:00.00 khugepaged

```



```
root@nodo1: /home/dylan
max: 13.58
95th percentile: 0.06
sum: 59484.88

Threads fairness:
  events (avg/stddev): 1164168.0000/0.00
  execution time (avg/stddev): 59.4849/0.00

root@nodo1:/home/dylan# sysbench --threads=1 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 o1tp_read_write run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read: 212352
    write: 53938
    other: 37070
    total: 303360
  transactions: 15168 (252.78 per sec.)
  queries: 303360 (5055.66 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total time: 60.0025s
  total number of events: 15168

Latency (ms):
  min: 2.34
  avg: 3.85
  max: 49.41
  95th percentile: 6.43
  sum: 59959.75

Threads fairness:
  events (avg/stddev): 15168.0000/0.00
  execution time (avg/stddev): 59.9597/0.00

root@nodo1:/home/dylan#
```

➤ o1tp_update_index

```
Nodo1 [Nodo1 Recien Instalado] [Corriendo] - Oracle VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda
top - 02:25:15 up 49 min, 2 users, load average: 0.62, 0.60, 0.38
Tasks: 111 total, 1 running, 108 sleeping, 2 stopped, 0 zombie
%Cpu(s): 1.2 us, 40.4 sy, 0.0 ni, 0.0 id, 57.1 wa, 0.0 hi, 1.2 si, 0.0 st
MiB Mem : 4414.5 total, 3506.6 free, 586.4 used, 545.1 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3828.1 avail Mem

  PID USER      PR  NI  VIRT  RES  SHR S %CPU  %MEM    TIME+  COMMAND
1595 mysql    20   0 1279584 213380 81792 S 32.2   4.7   4:36.47 mariadb
43 root      0 -20    0     0     0 I  5.0   0.0   0:07.63 kworker/0:1H-kblockd
230 root     20   0     0     0     0 S  1.7   0.0   0:03.84 jbd2/dm-0-8
1733 root     20   0 99364 13824 11136 S  1.3   0.3   0:00.10 sysbench
1659 root     20   0     0     0     0 I  0.7   0.0   0:03.22 kworker/0:0-kdmflush/252:0
1209 root     20   0 16900 7296 6144 S  0.3   0.2   0:00.48 sudo
1 root      20   0 22264 13400 9432 S  0.0   0.3   0:02.43 systemd
2 root      20   0     0     0     0 S  0.0   0.0   0:00.00 kthreadd
3 root      20   0     0     0     0 S  0.0   0.0   0:00.00 pool_workqueue_release
4 root      0 -20    0     0     0 I  0.0   0.0   0:00.00 kworker/R-rcu_g
5 root      0 -20    0     0     0 I  0.0   0.0   0:00.00 kworker/R-rcu_p
6 root      0 -20    0     0     0 I  0.0   0.0   0:00.00 kworker/R-slub_
7 root      0 -20    0     0     0 I  0.0   0.0   0:00.00 kworker/R-netns
12 root     0 -20    0     0     0 I  0.0   0.0   0:00.00 kworker/R-mm.pe
13 root     20   0     0     0     0 I  0.0   0.0   0:00.00 rcu_tasks_kthread
14 root     20   0     0     0     0 I  0.0   0.0   0:00.00 rcu_tasks_rude_kthread
15 root     20   0     0     0     0 I  0.0   0.0   0:00.00 rcu_tasks_trace_kthread
16 root     20   0     0     0     0 S  0.0   0.0   0:00.40 ksoftirqd/0
17 root     20   0     0     0     0 I  0.0   0.0   0:00.12 rcu_preempt
18 root     rt   0     0     0     0 S  0.0   0.0   0:00.03 migration/0
19 root     -51  0     0     0     0 S  0.0   0.0   0:00.00 idle_inject/0
20 root     20   0     0     0     0 S  0.0   0.0   0:00.00 cpuhp/0
21 root     20   0     0     0     0 S  0.0   0.0   0:00.00 kdevtmpfs
22 root     0 -20    0     0     0 I  0.0   0.0   0:00.00 kworker/R-inet_
24 root     20   0     0     0     0 S  0.0   0.0   0:00.00 kauditd
25 root     20   0     0     0     0 S  0.0   0.0   0:00.00 khungtaskd
26 root     20   0     0     0     0 S  0.0   0.0   0:00.00 oom_reaper
28 root     0 -20    0     0     0 I  0.0   0.0   0:00.00 kworker/R-write
29 root     20   0     0     0     0 S  0.0   0.0   0:00.15 kcompactd0
30 root     25   5     0     0     0 S  0.0   0.0   0:00.00 ksmd
31 root     39  19     0     0     0 S  0.0   0.0   0:00.00 khugepaged
```

```

root@nodol:/home/dylan
max: 49.41
95th percentile: 6.43
sum: 59959.75

Threads fairness:
  events (avg/stddev): 15168.0000/0.00
  execution time (avg/stddev): 59.9597/0.00

root@nodol:/home/dylan# sysbench --threads=1 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 o1tp_update_index run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
queries performed:
  read: 0
  write: 33019
  other: 2676
  total: 35695
transactions: 35695 (594.88 per sec.)
queries: 35695 (594.88 per sec.)
ignored errors: 0 (0.00 per sec.)
reconnects: 0 (0.00 per sec.)

General statistics:
total time: 60.0016s
total number of events: 35695

Latency (ms):
min: 0.04
avg: 1.68
max: 27.85
95th percentile: 4.18
sum: 59961.57

Threads fairness:
  events (avg/stddev): 35695.0000/0.00
  execution time (avg/stddev): 59.9616/0.00

root@nodol:/home/dylan#

```

➤ o1tp_update_non_index

```

Nodo1 (Nodo1 Recien Instalado) [Corriendo] - Oracle VirtualBox
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda
top - 02:26:55 up 51 min, 2 users, load average: 0.64, 0.63, 0.41
tasks: 109 total, 1 running, 106 sleeping, 2 stopped, 0 zombie
CPU(s): 0.0 us, 38.1 sy, 0.0 ni, 0.0 id, 61.2 wa, 0.0 hi, 0.6 si, 0.0 st
Mem: 4414.5 total, 3468.7 free, 586.8 used, 583.1 buff/cache
Swap: 4096.0 total, 4096.0 free, 0.0 used.

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
1535 mysql 20 0 1279584 238852 107136 S 28.6 5.3 4:58.07 mariadb
43 root 0 -20 0 0 0 I 5.6 0.0 0:11.22 kworker/0:1H-kblockd
230 root 20 0 0 0 0 S 2.7 0.0 0:05.17 jbd2/dm-0-8
1737 root 20 0 99492 13952 11264 S 1.0 0.3 0:00.20 sysbench
1659 root 20 0 0 0 0 I 0.7 0.0 0:03.74 kworker/0:0-kdmflush/252:0
1649 root 20 0 11944 5888 3712 R 0.3 0.1 0:01.51 top
1 root 20 0 22264 13400 9432 S 0.0 0.3 0:02.43 systemd
2 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kthreadd
3 root 20 0 0 0 0 S 0.0 0.0 0:00.00 pool_workqueue_release
4 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-rcu_g
5 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-rcu_p
6 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-slab_
7 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-netns
12 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-mm_0
13 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_kthread
14 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_rude_kthread
15 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_trace_kthread
16 root 20 0 0 0 0 S 0.0 0.0 0:00.41 ksoftirqd/0
17 root 20 0 0 0 0 I 0.0 0.0 0:00.12 rcu_preempt
18 root rt 0 0 0 0 S 0.0 0.0 0:00.03 migration/0
19 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/0
20 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/0
21 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kdevtmpfs
22 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-inet_
24 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kauditd
25 root 20 0 0 0 0 S 0.0 0.0 0:00.00 khungtaskd
26 root 20 0 0 0 0 S 0.0 0.0 0:00.00 oom_reaper
28 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-write
29 root 20 0 0 0 0 S 0.0 0.0 0:00.16 kcompactd0
30 root 25 5 0 0 0 S 0.0 0.0 0:00.00 ksmd
31 root 39 19 0 0 0 S 0.0 0.0 0:00.00 khugepaged

```

```
root@node01: /home/dylan
max: 27.85
95th percentile: 4.18
sum: 59961.57

Threads fairness:
events (avg/stddev): 35695.0000/0.00
execution time (avg/stddev): 59.9616/0.00

root@node01:/home/dylan# sysbench --threads=1 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 oltp_update_non_index run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
queries performed:
  read: 0
  write: 30790
  other: 2494
  total: 33284
transactions: 33284 (554.71 per sec.)
queries: 33284 (554.71 per sec.)
ignored errors: 0 (0.00 per sec.)
reconnects: 0 (0.00 per sec.)

General statistics:
total time: 60.0016s
total number of events: 33284

Latency (ms):
min: 0.04
avg: 1.80
max: 17.24
95th percentile: 4.33
sum: 59963.92

Threads fairness:
events (avg/stddev): 33284.0000/0.00
execution time (avg/stddev): 59.9639/0.00

root@node01:/home/dylan#
```

➤ oltp_write_only

```
Nodo01 (Nodo1 Recien instalado) [Corriendo] - Oracle VirtualBox

Archivo Máquina Ver Entrada Dispositivos Ayuda
top - 02:28:16 up 52 min, 2 users, load average: 0.53, 0.63, 0.44
tasks: 109 total, 2 running, 105 sleeping, 2 stopped, 0 zombie
%Cpu(s): 1.0 us, 21.7 sy, 0.0 ni, 46.8 id, 28.6 wa, 0.0 hi, 2.0 si, 0.0 st
MiB Mem: 4414.5 total, 3467.2 free, 561.4 used, 610.3 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3853.0 avail Mem

  PID USER      PR  NI   VIRT  RES  SHR  %CPU  %MEM    TIME+  COMMAND
 1535 mysql    20   0 1279584 255108 122752 S   18.0   5.6   5:11.00 mariadb
 48 root      0 -20    0      0    0 I    4.0   0.0   0:13.75 kworker/0:1H-kblockd
230 root      0   0      0      0    0 R    2.7   0.0   0:06:29 jbd2/mdo-0-8
1739 root      0   0 99492 13952 11264 S    2.0   0.3   0:00:06 sysbench
1151 dylan     20   0 15124  7088  5120 S    1.3   0.2   0:03:83 sshd
1659 root      0   0      0      0    0 I    1.0   0.0   0:04:22 kworker/0:0-kdmflush/252:0
 1 root      20   0 22264 13400  9432 S    0.0   0.3   0:02:43 systemd
 2 root      20   0      0      0    0 S    0.0   0.0   0:00:00 kthreadd
 3 root      20   0      0      0    0 S    0.0   0.0   0:00:00 pool_workqueue_release
 4 root      0 -20    0      0    0 I    0.0   0.0   0:00:00 kworker/R-rcu_g
 5 root      0 -20    0      0    0 I    0.0   0.0   0:00:00 kworker/R-rcu_p
 6 root      0 -20    0      0    0 I    0.0   0.0   0:00:00 kworker/R-slub_
 7 root      0 -20    0      0    0 I    0.0   0.0   0:00:00 kworker/R-netns
12 root      0 -20    0      0    0 I    0.0   0.0   0:00:00 kworker/R-mm_pe
13 root      20   0      0      0    0 I    0.0   0.0   0:00:00 rcu_tasks_kthread
14 root      20   0      0      0    0 I    0.0   0.0   0:00:00 rcu_tasks_rude_kthread
15 root      20   0      0      0    0 I    0.0   0.0   0:00:00 rcu_tasks_trace_kthread
16 root      20   0      0      0    0 S    0.0   0.0   0:00:41 ksoftirqd/0
17 root      20   0      0      0    0 I    0.0   0.0   0:00:12 rcu_preempt
18 root      rt   0      0      0    0 S    0.0   0.0   0:00:03 migration/0
19 root     -51   0      0      0    0 S    0.0   0.0   0:00:00 idle_inject/0
20 root      20   0      0      0    0 S    0.0   0.0   0:00:00 cpuhp/0
21 root      20   0      0      0    0 S    0.0   0.0   0:00:00 kdevtmpfs
22 root      0 -20    0      0    0 I    0.0   0.0   0:00:00 kworker/R-inet_
24 root      20   0      0      0    0 S    0.0   0.0   0:00:00 kauditd
25 root      20   0      0      0    0 S    0.0   0.0   0:00:00 khungtaskd
26 root      20   0      0      0    0 S    0.0   0.0   0:00:00 oom_reaper
28 root      0 -20    0      0    0 I    0.0   0.0   0:00:00 kworker/R-write
29 root      20   0      0      0    0 S    0.0   0.0   0:00:16 kcompactd0
30 root      25   5      0      0    0 S    0.0   0.0   0:00:00 ksmd
31 root      39  19      0      0    0 S    0.0   0.0   0:00:00 khugepaged
```

```

root@nodo1:/home/dylan
max: 17.24
95th percentile: 4.33
sum: 59963.92

Threads fairness:
  events (avg/stddev): 33284.0000/0.00
  execution time (avg/stddev): 59.9639/0.00

root@nodo1:/home/dylan# sysbench --threads=1 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 o1tp_write_only run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
queries performed:
  read: 0
  write: 86080
  other: 47522
  total: 133602
transactions: 22267 (371.08 per sec.)
queries: 133602 (2226.49 per sec.)
ignored errors: 0 (0.00 per sec.)
reconnects: 0 (0.00 per sec.)

General statistics:
total time: 60.0044s
total number of events: 22267

Latency (ms):
min: 1.49
avg: 2.69
max: 82.76
95th percentile: 4.91
sum: 59966.38

Threads fairness:
  events (avg/stddev): 22267.0000/0.00
  execution time (avg/stddev): 59.9664/0.00

root@nodo1:/home/dylan#

```

➤ select_random_points

```

Nodo1 [Nodo1 Recien Instalado] [Corriendo] - Oracle VirtualBox
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda
top - 02:29:40 up 54 min, 2 users, load average: 0.67, 0.69, 0.48
Tasks: 111 total, 2 running, 107 sleeping, 2 stopped, 0 zombie
%Cpu(s): 28.2 us, 6.4 sy, 0.0 ni, 8.2 id, 0.0 wa, 0.0 hi, 57.3 si, 0.0 st
MiB Mem : 4414.5 total, 3443.1 free, 535.7 used, 660.8 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3878.7 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM    TIME+  COMMAND
 1535 mysql     20   0 1279584 293508 158336 S   86.7   6.5   5:31.23 mariadb
 1746 root       20   0 100532 15092 11264 S    7.0   0.3   0:00.21 sysbench
 1151 dylan     20   0 15124 7088 5120 S    2.0   0.2   0:03.90 sshd
   16 root       20   0      0      0      0 R    0.7   0.0   0:00.43 ksoftirqd/0
 1659 root       20   0      0      0      0 I    0.3   0.0   0:05.10 kworker/0:0-events
    1 root       20   0 22264 13400 9432 S    0.0   0.3   0:02.43 systemd
    2 root       20   0      0      0      0 S    0.0   0.0   0:00.00 kthreadd
    3 root       20   0      0      0      0 S    0.0   0.0   0:00.00 pool_workqueue_release
    4 root       0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-rcu_g
    5 root       0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-rcu_p
    6 root       0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-slub_
    7 root       0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-netns
   12 root       0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-nm_pe
   13 root       20   0      0      0      0 I    0.0   0.0   0:00.00 rcu_tasks_kthread
   14 root       20   0      0      0      0 I    0.0   0.0   0:00.00 rcu_tasks_rude_kthread
   15 root       20   0      0      0      0 I    0.0   0.0   0:00.00 rcu_tasks_trace_kthread
   17 root       20   0      0      0      0 I    0.0   0.0   0:00.12 rcu_preempt
   18 root       rt    0      0      0      0 S    0.0   0.0   0:00.03 migration/0
   19 root      -51   0      0      0      0 S    0.0   0.0   0:00.00 idle_inject/0
   20 root       20   0      0      0      0 S    0.0   0.0   0:00.00 cpuhp/0
   21 root       20   0      0      0      0 S    0.0   0.0   0:00.00 kdevtmpfs
   22 root       0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-inet_
   24 root       20   0      0      0      0 S    0.0   0.0   0:00.00 kauditd
   25 root       20   0      0      0      0 S    0.0   0.0   0:00.00 khungtaskd
   26 root       20   0      0      0      0 S    0.0   0.0   0:00.00 odm_reaper
   28 root       0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-write
   29 root       20   0      0      0      0 S    0.0   0.0   0:00.16 kcompactd0
   30 root       25   5      0      0      0 S    0.0   0.0   0:00.00 ksmd
   31 root       39  19      0      0      0 S    0.0   0.0   0:00.00 khugepaged
   32 root       0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-kInte
   33 root       0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker/R-kblac

```

```

root@nodol:/home/dylan
max: 82.76
95th percentile: 4.91
sum: 59966.38

Threads fairness:
  events (avg/stddev): 22267.0000/0.00
  execution time (avg/stddev): 59.9664/0.00

root@nodol:/home/dylan# sysbench --threads=1 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 select_random_points run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read: 11151
    write: 0
    other: 0
    total: 11151
  transactions: 11151 (185.84 per sec.)
  queries: 11151 (185.84 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total time: 60.0033s
  total number of events: 11151

Latency (ms):
  min: 1.15
  avg: 5.38
  max: 66.50
  95th percentile: 7.84
  sum: 59973.09

Threads fairness:
  events (avg/stddev): 11151.0000/0.00
  execution time (avg/stddev): 59.9731/0.00

root@nodol:/home/dylan#

```

➤ select_random_ranges

```

Nodo1 (Nodo1 Recien Instalado) [Corriendo] - Oracle VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda
top - 02:31:04 up 55 min, 2 users, load average: 0.58, 0.69, 0.50
Tasks: 112 total, 1 running, 109 sleeping, 2 stopped, 0 zombie
Cpu(s): 32.6 us, 2.1 sy, 0.0 ni, 0.0 id, 0.0 wa, 0.0 hi, 65.3 si, 0.0 st
Mem Mem: 4414.5 total, 3440.9 free, 537.9 used, 660.8 buff/cache
Mem Swap: 4096.0 total, 4096.0 free, 0.0 used, 9876.5 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR  S  %CPU  %MEM     TIME+ COMMAND
 1535 mysql    20   0 1279584 293508 158336 S  97.7   6.5   6:20.05 mariadb
 1751 root      20   0  99492 13952 11264 S   1.0   0.3   0:00.04 sysbench
 1151 dylan    20   0 15124 7088 5120 S   0.7   0.2   0:03.97 sshd
   16 root      20   0   0 0 S 0.3 0.0 0:00.47 ksoftirqd/0
  537 systemd+ 20   0 18996 9472 8320 S 0.3 0.2 0:00.21 systemd-network
 1659 root      20   0   0 0 I 0.3 0.0 0:05.26 kworker/0:0-mm_percpu_wq
    1 root      20   0 22264 13400 9432 S 0.0 0.3 0:02.44 systemd
    2 root      20   0   0 0 S 0.0 0.0 0:00.00 kthreadd
    3 root      20   0   0 0 S 0.0 0.0 0:00.00 pool_workqueue_release
    4 root      0 -20   0 0 I 0.0 0.0 0:00.00 kworker/R-rcu_g
    5 root      0 -20   0 0 I 0.0 0.0 0:00.00 kworker/R-rcu_p
    6 root      0 -20   0 0 I 0.0 0.0 0:00.00 kworker/R-slub
    7 root      0 -20   0 0 I 0.0 0.0 0:00.00 kworker/R-neofs
   12 root      0 -20   0 0 I 0.0 0.0 0:00.00 kworker/R-mm_pe
   13 root      20   0   0 0 I 0.0 0.0 0:00.00 rcu_tasks_kthread
   14 root      20   0   0 0 I 0.0 0.0 0:00.00 rcu_tasks_rude_kthread
   15 root      20   0   0 0 I 0.0 0.0 0:00.00 rcu_tasks_trace_kthread
   17 root      20   0   0 0 I 0.0 0.0 0:00.12 rcu_preempt
   18 root      rt   0   0 0 S 0.0 0.0 0:00.03 migration/0
   19 root     -51   0   0 0 S 0.0 0.0 0:00.00 idle_inject/0
   20 root      20   0   0 0 S 0.0 0.0 0:00.00 cpuhp/0
   21 root      20   0   0 0 S 0.0 0.0 0:00.00 kdevtmpfs
   22 root      0 -20   0 0 I 0.0 0.0 0:00.00 kworker/R-inet_
   24 root      20   0   0 0 S 0.0 0.0 0:00.00 kauditd
   25 root      20   0   0 0 S 0.0 0.0 0:00.00 khungtaskd
   26 root      20   0   0 0 S 0.0 0.0 0:00.00 oom_reaper
   28 root      0 -20   0 0 I 0.0 0.0 0:00.00 kworker/R-write
   29 root      20   0   0 0 S 0.0 0.0 0:00.17 kcompactd0
   30 root      25   5   0 0 S 0.0 0.0 0:00.00 ksmd
   31 root      39  19   0 0 S 0.0 0.0 0:00.00 khugepaged
   32 root      0 -20   0 0 I 0.0 0.0 0:00.00 kworker/R-kinte

```

```

root@nodo1:/home/dylan
max: 66.50
95th percentile: 7.84
sum: 59973.09

Threads fairness:
  events (avg/stddev): 11151.0000/0.00
  execution time (avg/stddev): 59.9731/0.00

root@nodo1:/home/dylan# sysbench --threads=1 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 select_random_ranges run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read: 14449
    write: 0
    other: 0
    total: 14449
  transactions: 14449 (240.81 per sec.)
  queries: 14449 (240.81 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total time: 60.0009s
  total number of events: 14449

Latency (ms):
  min: 0.88
  avg: 4.15
  max: 18.55
  95th percentile: 6.43
  sum: 59970.10

Threads fairness:
  events (avg/stddev): 14449.0000/0.00
  execution time (avg/stddev): 59.9701/0.00

root@nodo1:/home/dylan#

```

➤ Ahora inicie las Pruebas de Sysbench con 2 Cores

➤ oltp_read_only

```

Nodo1 (Nodo1 Recien Instalado) [Comando] - Oracle VirtualBox
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda

top - 02:48:37 up 7 min,  2 users,  load average: 0.00, 0.03, 0.02
tasks: 120 total,   1 running, 117 sleeping,   2 stopped,   0 zombie
Rout(s): 69.2 us, 23.1 sy,   0.0 ni,   0.0 id,   0.0 wa,   0.0 hi,  7.7 si,   0.0 st
MiB Mem : 4414.1 total,  3718.3 free,   531.4 used,   384.0 buff/cache
MiB Swap: 4096.0 total,  4096.0 free,    0.0 used,  3882.6 avail Mem

  PID USER      PR  NI   VIRT    RES    SHR  S  %CPU  %MEM    TIME+  COMMAND
1343 mysql    20   0 1740848 266064 156288 S 160.5   5.9   0:09.65 mariadb
1428 root     20   0 165544 14464 11136 S  38.9   0.3   0:02.10 sysbench
  65 root     20   0      0      0      0 I   0.3   0.0   0:00.48 kworker/1:2-events
1170 dylan    20   0 15120  7084  5120 S   0.3   0.2   0:00.87 sshd
   1 root     20   0 22176 13128  9288 S   0.0   0.3   0:02.59 systemd
   2 root     20   0      0      0      0 S   0.0   0.0   0:00.02 kthreadd
   3 root     20   0      0      0      0 S   0.0   0.0   0:00.00 pool_workqueue_release
   4 root     0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/R-rcu_g
   5 root     0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/R-rcu_p
   6 root     0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/R-slub
   7 root     0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/R-netns
   9 root     20   0      0      0      0 I   0.0   0.0   0:01.44 kworker/0:1-ata_sff
  10 root     0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/0:0H-events_highpri
  11 root     20   0      0      0      0 I   0.0   0.0   0:00.00 kworker/u4:0-ext4-rsv-conversion
  12 root     0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/R-mm_pe
  13 root     20   0      0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_kthread
  14 root     20   0      0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
  15 root     20   0      0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
  16 root     20   0      0      0      0 S   0.0   0.0   0:00.11 ksoftirqd/0
  17 root     20   0      0      0      0 I   0.0   0.0   0:00.13 rcu_preempt
  18 root     rt   0      0      0      0 S   0.0   0.0   0:00.00 migration/0
  19 root    -51   0      0      0      0 S   0.0   0.0   0:00.00 idle_inject/0
  20 root     20   0      0      0      0 S   0.0   0.0   0:00.00 cpuhp/0
  21 root     20   0      0      0      0 S   0.0   0.0   0:00.00 cpuhp/1
  22 root    -51   0      0      0      0 S   0.0   0.0   0:00.00 idle_inject/1
  23 root     rt   0      0      0      0 S   0.0   0.0   0:00.80 migration/1
  24 root     20   0      0      0      0 S   0.0   0.0   0:00.11 ksoftirqd/1
  29 root     20   0      0      0      0 S   0.0   0.0   0:00.03 kdevtmpfs
  30 root     0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/R-inet
  31 root     20   0      0      0      0 I   0.0   0.0   0:00.84 kworker/u5:1-flush-252:0
  32 root     20   0      0      0      0 S   0.0   0.0   0:00.00 kauditd

```

```

root@nodol1:/home/dylan
Feb 19 02:44:30 nodol1 mariadb[1343]: 2025-02-19 2:44:30 1 [Note] WSREP: Server status change joined -> synced
Feb 19 02:44:30 nodol1 mariadb[1343]: 2025-02-19 2:44:30 1 [Note] WSREP: Synchronized with group, ready for connections
Feb 19 02:44:30 nodol1 mariadb[1343]: 2025-02-19 2:44:30 1 [Note] WSREP: wsrep_notify_cmd is not defined, skipping notification.
Feb 19 02:44:30 nodol1 systemd[1]: Started mariadb.service - MariaDB 10.11.8 database server.
Feb 19 02:44:30 nodol1 /etc/mysql/debian-start[1367]: Upgrading MariaDB tables if necessary.
Feb 19 02:44:30 nodol1 /etc/mysql/debian-start[1379]: Checking for insecure root accounts.
lines 1-28/28 (END)
(lj)+ Stopped                                systemctl status mysql
root@nodol1:/home/dylan# sysbench --threads=2 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 oltp_read_only run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 2
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read:                1601544
    write:                0
    other:               228792
    total:              1830336
  transactions:         114396 (1906.52 per sec.)
  queries:              1830336 (30504.37 per sec.)
  ignored errors:        0 (0.00 per sec.)
  reconnects:            0 (0.00 per sec.)

General statistics:
  total time:            60.0013s
  total number of events: 114396

Latency (ms):
  min:                   0.77
  avg:                   1.05
  max:                   12.68
  95th percentile:      1.27
  sum:                   119882.17

Threads fairness:
  events (avg/stddev):   57198.0000/64.00
  execution time (avg/stddev): 59.9411/0.00
root@nodol1:/home/dylan#

```

➤ oltp_delete

Nodo1 (Nodo1 Recien Instalado) [Corriendo] - Oracle VirtualBox

Archivo Máquina Ver Entrada Dispositivos Ayuda

top - 02:52:41 up 11 min, 2 users, load average: 1.01, 0.39, 0.16
 tasks: 122 total, 1 running, 119 sleeping, 2 stopped, 0 zombie
 %Cpu(s): 60.4 us, 32.1 sy, 0.0 ni, 3.8 id, 1.9 wa, 0.0 hi, 1.9 si, 0.0 st
 MiB Mem : 4414.1 total, 3710.6 free, 536.4 used, 386.7 buff/cache
 MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3877.7 avail Mem

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1343	mysql	20	0	1740848	271696	156928	S	147.5	6.0	2:43.73	mariadb
1440	root	20	0	165288	14336	11264	S	50.8	0.3	0:22.39	sysbench
24	root	20	0	0	0	0	S	0.3	0.0	0:00.13	ksoftirqd/1
1	root	20	0	22176	13128	9288	S	0.0	0.3	0:02.61	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.02	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	pool_workqueue_release
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-rcu_g
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-rcu_p
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-slab
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-netns
9	root	20	0	0	0	0	I	0.0	0.0	0:01.57	kworkeR/0:1-events
10	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/0:0H-events_highpri
11	root	20	0	0	0	0	I	0.0	0.0	0:00.00	kworkeR/u4:0-ext4-rsv-conversion
12	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-mm_oe
13	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_kthread
14	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_rude_kthread
15	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_trace_kthread
16	root	20	0	0	0	0	S	0.0	0.0	0:00.13	ksoftirqd/0
17	root	20	0	0	0	0	I	0.0	0.0	0:00.13	rcu_preempt
18	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/0
19	root	-51	0	0	0	0	S	0.0	0.0	0:00.00	idle_inject/0
20	root	20	0	0	0	0	S	0.0	0.0	0:00.00	cpuhp/0
21	root	20	0	0	0	0	S	0.0	0.0	0:00.00	cpuhp/1
22	root	-51	0	0	0	0	S	0.0	0.0	0:00.00	idle_inject/1
23	root	rt	0	0	0	0	S	0.0	0.0	0:00.80	migration/1
29	root	20	0	0	0	0	S	0.0	0.0	0:00.03	kdevtmpfs
30	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-inet_
31	root	20	0	0	0	0	I	0.0	0.0	0:00.85	kworkeR/u5:1-events_power_efficient
32	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kauditd
33	root	20	0	0	0	0	S	0.0	0.0	0:00.00	khungtaskd
34	root	20	0	0	0	0	S	0.0	0.0	0:00.00	oom_reaper

```
root@nodol1:/home/dylan
max: 12.68
95th percentile: 1.27
sum: 119882.17

Threads fairness:
events (avg/stddev): 57198.0000/64.00
execution time (avg/stddev): 59.9411/0.00

root@nodol1:/home/dylan# sysbench --threads=2 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 oltp_delete run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 2
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
queries performed:
  read: 0
  write: 3499
  other: 2448378
  total: 2451877
transactions: 2451877 (40862.93 per sec.)
queries: 2451877 (40862.93 per sec.)
ignored errors: 0 (0.00 per sec.)
reconnects: 0 (0.00 per sec.)

General statistics:
total time: 60.0013s
total number of events: 2451877

Latency (ms):
min: 0.03
avg: 0.05
max: 16.18
95th percentile: 0.07
sum: 119081.72

Threads fairness:
events (avg/stddev): 1225938.5000/1829.50
execution time (avg/stddev): 59.5409/0.01

root@nodol1:/home/dylan#
```

➤ oltp_insert

```
Nodol1 (Nodo1 Recien Instalado) [Corriendo] - Oracle VirtualBox

Archivo Máquina Ver Entrada Dispositivos Ayuda
root - 0x4330:29 up 12 min, 2 users, 1680 average: 0.68, 0.40, 0.18
Tasks: 122 total, 1 running, 119 sleeping, 2 stopped, 0 zombie
%cpu(s): 3.5 us, 17.7 sy, 0.0 ni, 39.0 id, 29.0 wa, 0.0 hi, 10.8 si, 0.0 st
MIB Mem : 4414.1 total, 3706.3 free, 537.7 used, 389.8 buff/cache
MIB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3876.4 avail Mem

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
1343 mysql 20 0 1740848 271696 156928 S 34.9 6.0 3:01.50 mariadb
1446 root 20 0 165800 14464 11136 S 5.3 0.3 0:00.36 sysbench
52 root 0 -20 0 0 0 I 2.7 0.0 0:00.50 kworker/0:1H-kblockd
64 root 0 -20 0 0 0 I 2.0 0.0 0:00.56 kworker/1:1H-kblockd
246 root 20 0 0 0 0 D 1.3 0.0 0:00.21 jbd2/dm-0-8
1435 root 20 0 0 0 0 I 0.7 0.0 0:00.18 kworker/0:3-kdmflush/252:0
16 root 20 0 0 0 0 S 0.3 0.0 0:00.16 ksoftirqd/0
205 root 20 0 0 0 0 I 0.3 0.0 0:00.17 kworker/u5:3-events_unbound
1190 dylan 20 0 11944 5888 3712 R 0.3 0.1 0:00.73 top
1 root 20 0 22176 13128 9288 S 0.0 0.3 0:02.62 systemd
2 root 20 0 0 0 0 S 0.0 0.0 0:00.02 kthreadd
3 root 20 0 0 0 0 S 0.0 0.0 0:00.00 pool_workqueue_release
4 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-rcu_g
5 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-rcu_p
6 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-slub_
7 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-netns
9 root 20 0 0 0 0 I 0.0 0.0 0:01.57 kworker/0:1-events
10 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/0:0H-events_highpri
11 root 20 0 0 0 0 I 0.0 0.0 0:00.00 kworker/u4:0-ext4-rsv-conversion
12 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-mm_pg
13 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_kthread
14 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_rude_kthread
15 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_trace_kthread
17 root 20 0 0 0 0 I 0.0 0.0 0:00.13 rcu_preempt
18 root rt 0 0 0 0 S 0.0 0.0 0:00.00 migration/0
19 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/0
20 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/0
21 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/1
22 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/1
23 root rt 0 0 0 0 S 0.0 0.0 0:00.00 migration/1
24 root 20 0 0 0 0 S 0.0 0.0 0:00.13 ksoftirqd/1
```



```
root@nodo1:/home/dylan
max: 16.18
95th percentile: 0.07
sum: 119081.72

Threads fairness:
  events (avg/stddev): 1225938.5000/1829.50
  execution time (avg/stddev): 59.5409/0.01

root@nodo1:/home/dylan# sysbench --threads=2 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 oltp_insert run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 2
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read: 0
    write: 32385
    other: 0
    total: 32385
  transactions: 32385 (539.71 per sec.)
  queries: 32385 (539.71 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total time: 60.0032s
  total number of events: 32385

Latency (ms):
  min: 1.28
  avg: 3.70
  max: 120.81
  95th percentile: 6.55
  sum: 119895.29

Threads fairness:
  events (avg/stddev): 16192.5000/25.50
  execution time (avg/stddev): 59.9476/0.00

root@nodo1:/home/dylan#
```

➤ oltp_point_select

```
Nodo1 (Nodo1 Recien Instalado) [Comiendo] - Oracle VirtualBox

Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda
op - 02:55:03 up 14 min, 2 users, 1000 average: 0.57, 0.51, 0.25
tasks: 122 total, 1 running, 119 sleeping, 2 stopped, 0 zombie
Cpu(s): 9.2 us, 6.2 sy, 0.0 ni, 83.1 id, 0.0 wa, 0.0 hi, 1.5 si, 0.0 st
MiB Mem : 4414.1 total, 3689.1 free, 546.1 used, 398.7 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3868.0 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR   S   %CPU  %MEM    TIME+  COMMAND
 1343 mysql    20   0 1740848 278864 156928 S   131.6   6.2   3:26.89 mariadb
 1451 root      20   0 165288 14880 11264 S    48.5   0.3   0:01.46 sysbench
 1178 dylan     20   0 15120 7004 5120 S    1.0   0.2   0:01.22 sshd
   17 root      20   0 0 0 0 I    0.3   0.0   0:00.14 rcu_preempt
 1435 root      20   0 0 0 0 I    0.3   0.0   0:00.33 kworker/0:3-events
    1 root      20   0 22176 13128 9288 S    0.0   0.3   0:02.62 systemd
    2 root      20   0 0 0 0 S    0.0   0.0   0:00.02 kthread
    3 root      20   0 0 0 0 S    0.0   0.0   0:00.00 pool_workqueue_release
    4 root      0 -20 0 0 0 I    0.0   0.0   0:00.00 kworker/R-rcu_g
    5 root      0 -20 0 0 0 I    0.0   0.0   0:00.00 kworker/R-rcu_p
    6 root      0 -20 0 0 0 I    0.0   0.0   0:00.00 kworker/R-slub_
    7 root      0 -20 0 0 0 I    0.0   0.0   0:00.00 kworker/R-netns
    9 root      20   0 0 0 0 I    0.0   0.0   0:01.57 kworker/0:1-events
   10 root      0 -20 0 0 0 I    0.0   0.0   0:00.00 kworker/0:0H-events_highpri
   11 root      20   0 0 0 0 I    0.0   0.0   0:00.00 kworker/u4:0-ext4-rsv-conversion
   12 root      0 -20 0 0 0 I    0.0   0.0   0:00.00 kworker/R-mm_pe
   13 root      20   0 0 0 0 I    0.0   0.0   0:00.00 rcu_tasks_kthread
   14 root      20   0 0 0 0 I    0.0   0.0   0:00.00 rcu_tasks_rude_kthread
   15 root      20   0 0 0 0 I    0.0   0.0   0:00.00 rcu_tasks_trace_kthread
   16 root      20   0 0 0 0 S    0.0   0.0   0:00.32 ksoftirqd/0
   18 root      rt  0 0 0 0 S    0.0   0.0   0:00.00 migration/0
   19 root     -51  0 0 0 0 S    0.0   0.0   0:00.00 idle_inject/0
   20 root      20   0 0 0 0 S    0.0   0.0   0:00.00 cpuhp/0
   21 root      20   0 0 0 0 S    0.0   0.0   0:00.00 cpuhp/1
   22 root     -51  0 0 0 0 S    0.0   0.0   0:00.00 idle_inject/1
   23 root      rt  0 0 0 0 S    0.0   0.0   0:00.00 migration/1
   24 root      20   0 0 0 0 S    0.0   0.0   0:00.14 ksoftirqd/1
   29 root      20   0 0 0 0 S    0.0   0.0   0:00.03 kdevtmpfs
   30 root      0 -20 0 0 0 I    0.0   0.0   0:00.00 kworker/R-inet_
   31 root      20   0 0 0 0 I    0.0   0.0   0:00.85 kworker/u5:1-events_power_efficient
   32 root      20   0 0 0 0 S    0.0   0.0   0:00.00 kauditd
```

```

root@nodol:/home/dylan
max: 120.81
95th percentile: 6.55
sum: 119895.29

Threads fairness:
  events (avg/stddev): 16192.5000/25.50
  execution time (avg/stddev): 59.9476/0.00

root@nodol:/home/dylan# sysbench --threads=2 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 oltp_point_select run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 2
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read: 2737216
    write: 0
    other: 0
    total: 2737216
  transactions: 2737216 (45618.38 per sec.)
  queries: 2737216 (45618.38 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total time: 60.0011s
  total number of events: 2737216

Latency (ms):
  min: 0.02
  avg: 0.04
  max: 15.36
  95th percentile: 0.06
  sum: 119028.50

Threads fairness:
  events (avg/stddev): 1368608.0000/2620.00
  execution time (avg/stddev): 59.5143/0.01

root@nodol:/home/dylan#

```

➤ oltp_read_write

```

Nodo1 (Nodo1 Recien Instalado) [Corriendo] - Oracle VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda
top - 02:56:51 up 15 min, 2 users, 1000 average: 0.07, 0.67, 0.34
Tasks: 123 total, 2 running, 119 sleeping, 2 stopped, 0 zombie
Cpu(s): 27.2 us, 30.2 sy, 0.0 ni, 16.3 id, 20.3 wa, 0.0 hi, 6.0 si, 0.0 st
Mem: 4414.1 total, 3664.3 free, 556.2 used, 413.8 buff/cache
Swap: 4096.0 total, 4096.0 free, 0.0 used, 3857.9 avail Mem

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM     TIME+ COMMAND
 1343 mysql    20   0 1740848 281552 156820 S   0.7    6.2   4:55.16 mariadbd
1485 root      20   0 165544 14848 11136 S  21.6    0.3   0:01.30 sysbench
 52 root      0 -20   0     0     0 I   1.3    0.0   0:01.83 kworker/0:1H-kblockd
 64 root      0 -20   0     0     0 I   1.3    0.0   0:01.77 kworker/1:1H-kblockd
1190 dylan     20   0 11944 5888 3712 R   0.3    0.1   0:00.97 top
  1 root      20   0 22176 13128 9288 S   0.0    0.3   0:02.65 systemd
  2 root      20   0   0     0     0 S   0.0    0.0   0:00.02 kthreadd
  3 root      20   0   0     0     0 S   0.0    0.0   0:00.00 pool_workqueue_release
  4 root      0 -20   0     0     0 I   0.0    0.0   0:00.00 kworker/R-rcu_g
  5 root      0 -20   0     0     0 I   0.0    0.0   0:00.00 kworker/R-rcu_p
  6 root      0 -20   0     0     0 I   0.0    0.0   0:00.00 kworker/R-slab_
  7 root      0 -20   0     0     0 I   0.0    0.0   0:00.00 kworker/R-netns
  9 root      20   0   0     0     0 I   0.0    0.0   0:01.57 kworker/0:1-cgroup_destroy
10 root      0 -20   0     0     0 I   0.0    0.0   0:00.00 kworker/0:0H-events_highpri
11 root      20   0   0     0     0 I   0.0    0.0   0:00.00 kworker/u4:0-ext4-rsv-conversion
12 root      0 -20   0     0     0 I   0.0    0.0   0:00.00 kworker/R-mm_pg
13 root      20   0   0     0     0 I   0.0    0.0   0:00.00 rcu_tasks_kthread
14 root      20   0   0     0     0 I   0.0    0.0   0:00.00 rcu_tasks_rude_kthread
15 root      20   0   0     0     0 I   0.0    0.0   0:00.00 rcu_tasks_trace_kthread
16 root      20   0   0     0     0 R   0.0    0.0   0:00.34 ksoftirqd/0
17 root      20   0   0     0     0 I   0.0    0.0   0:00.14 rcu_preempt
18 root      rt   0   0     0     0 S   0.0    0.0   0:00.00 migration/0
19 root      -51   0   0     0     0 S   0.0    0.0   0:00.00 idle_inject/0
20 root      20   0   0     0     0 S   0.0    0.0   0:00.00 cpuhp/0
21 root      20   0   0     0     0 S   0.0    0.0   0:00.00 cpuhp/1
22 root      -51   0   0     0     0 S   0.0    0.0   0:00.00 idle_inject/1
23 root      rt   0   0     0     0 S   0.0    0.0   0:00.01 migration/1
24 root      20   0   0     0     0 S   0.0    0.0   0:00.15 ksoftirqd/1
29 root      20   0   0     0     0 S   0.0    0.0   0:00.03 kdevtmpfs
30 root      0 -20   0     0     0 I   0.0    0.0   0:00.00 kworker/R-inet_
31 root      20   0   0     0     0 I   0.0    0.0   0:00.85 kworker/U5:1-events_power_efficient

```

```
root@nodol:/home/dylan
max: 15.36
95th percentile: 0.06
sum: 119028.50

Threads fairness:
events (avg/stddev): 1368608.0000/2620.00
execution time (avg/stddev): 59.5143/0.01

root@nodol:/home/dylan# sysbench --threads=2 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 oltp_read_write run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 2
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
queries performed:
  read: 345380
  write: 90313
  other: 57705
  total: 493398
transactions: 24669 (411.08 per sec.)
queries: 493398 (8221.97 per sec.)
ignored errors: 1 (0.02 per sec.)
reconnects: 0 (0.00 per sec.)

General statistics:
total time: 60.0085s
total number of events: 24669

Latency (ms):
min: 2.77
avg: 4.86
max: 55.65
95th percentile: 9.73
sum: 119929.53

Threads fairness:
events (avg/stddev): 12334.5000/7.50
execution time (avg/stddev): 59.9648/0.00

root@nodol:/home/dylan#
```

➤ oltp_update_index

```
Nodol (Nodo1 Recien Instalado) [Corriendo] - Oracle VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda
top - 02:58:35 up 17 min, 2 users, load average: 0.71, 0.77, 0.42
Tasks: 123 total, 1 running, 120 sleeping, 2 stopped, 0 zombie
CPU(s): 1.5 us, 6.0 sy, 0.0 ni, 80.0 id, 0.6 wa, 0.0 hi, 0.9 si, 0.0 st
Mem Mem : 4414.1 total, 3665.1 free, 555.3 used, 413.9 buff/cache
Mem Swap: 4096.0 total, 4096.0 free, 0.0 used, 3858.8 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR  S  %CPU  %MEM     TIME+ COMMAND
 1343 mysql    20   0 1749044 284624 156928 S   16.6   6.3   5:47.73 mariadb
 1492 root      20   0 165288   14208 11264 S    3.3   0.3   0:00.10 sysbench
 1170 dylan     20   0 15120    7084  5120 S    1.3   0.2   0:01.49 sshd
   64 root      0 -20     0     0     0 I    1.0   0.0   0:02.53 kworker/1:1H-kblockd
   52 root      0 -20     0     0     0 I    0.7   0.0   0:02.55 kworker/0:1H-kblockd
   17 root      20   0     0     0     0 I    0.3   0.0   0:00.15 rcu_preempt
 1435 root      20   0     0     0     0 I    0.3   0.0   0:00.54 kworker/0:3-events
    1 root      20   0  22176  13120   9208 S    0.0   0.3   0:02.65 systemd
    2 root      20   0     0     0     0 S    0.0   0.0   0:00.02 kthreadd
    3 root      20   0     0     0     0 S    0.0   0.0   0:00.00 pool_workqueue_release
    4 root      0 -20     0     0     0 I    0.0   0.0   0:00.00 kworker/R-rcu_g
    5 root      0 -20     0     0     0 I    0.0   0.0   0:00.00 kworker/R-rcu_p
    6 root      0 -20     0     0     0 I    0.0   0.0   0:00.00 kworker/R-slub
    7 root      0 -20     0     0     0 I    0.0   0.0   0:00.00 kworker/R-netns
    9 root      20   0     0     0     0 I    0.0   0.0   0:01.57 kworker/0:1-cgroup_destroy
   10 root      0 -20     0     0     0 I    0.0   0.0   0:00.00 kworker/0:0H-events_highpri
   11 root      20   0     0     0     0 I    0.0   0.0   0:00.00 kworker/u4:0-ext4-rsv-conversion
   12 root      0 -20     0     0     0 I    0.0   0.0   0:00.00 kworker/R-mm_pe
   13 root      20   0     0     0     0 I    0.0   0.0   0:00.00 rcu_tasks_kthread
   14 root      20   0     0     0     0 I    0.0   0.0   0:00.00 rcu_tasks_rude_kthread
   15 root      20   0     0     0     0 I    0.0   0.0   0:00.00 rcu_tasks_trace_kthread
   16 root      20   0     0     0     0 S    0.0   0.0   0:00.44 ksoftirqd/0
   18 root      rt   0     0     0     0 S    0.0   0.0   0:00.00 migration/0
   19 root     -51   0     0     0     0 S    0.0   0.0   0:00.00 idle_inject/0
   20 root      20   0     0     0     0 S    0.0   0.0   0:00.00 cpuhp/0
   21 root      20   0     0     0     0 S    0.0   0.0   0:00.00 cpuhp/1
   22 root     -51   0     0     0     0 S    0.0   0.0   0:00.00 idle_inject/1
   23 root      rt   0     0     0     0 S    0.0   0.0   0:00.01 migration/1
   24 root      20   0     0     0     0 S    0.0   0.0   0:00.23 ksoftirqd/1
   29 root      20   0     0     0     0 S    0.0   0.0   0:00.03 kdevtmpfs
   30 root      0 -20     0     0     0 I    0.0   0.0   0:00.00 kworker/R-inet_

root@nodol:/home/dylan
Number of threads: 2
Initializing random number generator from current time
```

```

root@nodol:/home/dylan
max: 55.65
95th percentile: 9.73
sum: 119929.53

Threads fairness:
  events (avg/stddev): 12334.5000/7.50
  execution time (avg/stddev): 59.9648/0.00

root@nodol:/home/dylan# sysbench --threads=2 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 oltp_update_index run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 2
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read: 0
    write: 33784
    other: 1626
    total: 35410
  transactions: 35410 (590.13 per sec.)
  queries: 35410 (590.13 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total time: 60.0027s
  total number of events: 35410

Latency (ms):
  min: 0.04
  avg: 3.39
  max: 47.54
  95th percentile: 4.57
  sum: 119942.00

Threads fairness:
  events (avg/stddev): 17705.0000/0.00
  execution time (avg/stddev): 59.9710/0.00

root@nodol:/home/dylan#

```

➤ oltp_update_non_index

```

Node1 (Node1 Recien Instalado) [Comando] - Oracle VirtualBox
Archivo Maquina Ver Entrada Dispositivos Ayuda
root - 03:00:49 up 19 min, 2 users, 1680 average: 1.07, 0.86, 0.50
Tasks: 122 total, 1 running, 119 sleeping, 2 stopped, 0 zombie
%Cpu(s): 4.7 us, 20.2 sy, 0.0 ni, 37.7 id, 28.4 wa, 0.0 hi, 9.1 si, 0.0 st
MiB Mem : 4414.1 total, 3659.3 free, 561.0 used, 414.1 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3853.1 avail Mem

  PID USER   PR  NI  VIRT  RES  SHR  S  %CPU  %MEM    TIME+  COMMAND
 1343 mysql  20   0 1749044 284800 156928 S  45.7   6.3   6:30.85 mariadb
1495 root    20   0 165416 14464 11264 S   3.3   0.3   0:01.36 sysbench
  52 root    0 -20   0     0     0 I   2.3   0.0   0:04.62 kworker/0:1H-kblockd
  64 root    0 -20   0     0     0 I   1.7   0.0   0:04.52 kworker/1:1H-kblockd
  16 root    0 -20   0     0     0 S   0.3   0.0   0:00.71 ksoftirqd/0
1190 dylan  20   0 11944  5888  3712 R   0.3   0.1   0:01.30 top
1426 root    0 -20   0     0     0 I   0.3   0.0   0:00.06 kworker/u5:0-events_freezable_power_
1435 root    0 -20   0     0     0 I   0.3   0.0   0:00.79 kworker/0:3-ata_sff
    1 root    20   0 22176 13128  9288 S   0.0   0.3   0:02.66 systemd
    2 root    20   0   0     0     0 S   0.0   0.0   0:00.02 kthreadd
    3 root    20   0   0     0     0 S   0.0   0.0   0:00.00 pool_workqueue_release
    4 root    0 -20   0     0     0 I   0.0   0.0   0:00.00 kworker/R-rcu_g
    5 root    0 -20   0     0     0 I   0.0   0.0   0:00.00 kworker/R-rcu_p
    6 root    0 -20   0     0     0 I   0.0   0.0   0:00.00 kworker/R-slub_
    7 root    0 -20   0     0     0 I   0.0   0.0   0:00.00 kworker/R-netns
    9 root    20   0   0     0     0 I   0.0   0.0   0:01.57 kworker/0:1-cgroup_destroy
   10 root    0 -20   0     0     0 I   0.0   0.0   0:00.00 kworker/0:0H-events_highpri
   11 root    20   0   0     0     0 I   0.0   0.0   0:00.00 kworker/u4:0-ext4-rsv-conversion
   12 root    0 -20   0     0     0 I   0.0   0.0   0:00.00 kworker/R-mm_ope
   13 root    20   0   0     0     0 I   0.0   0.0   0:00.00 rcu_tasks_kthread
   14 root    20   0   0     0     0 I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
   15 root    20   0   0     0     0 I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
   17 root    20   0   0     0     0 I   0.0   0.0   0:00.15 rcu_preempt
   18 root    rt   0   0     0     0 S   0.0   0.0   0:00.00 migration/0
   19 root   -51   0   0     0     0 S   0.0   0.0   0:00.00 idle_inject/0
   20 root    20   0   0     0     0 S   0.0   0.0   0:00.00 cpuhp/0
   21 root    20   0   0     0     0 S   0.0   0.0   0:00.00 cpuhp/1
   22 root   -51   0   0     0     0 S   0.0   0.0   0:00.00 idle_inject/1
   23 root    rt   0   0     0     0 S   0.0   0.0   0:00.81 migration/1
   24 root    20   0   0     0     0 S   0.0   0.0   0:00.26 ksoftirqd/1
   29 root    20   0   0     0     0 S   0.0   0.0   0:00.03 kdevtmpfs

root@nodol:/home/dylan
Number of threads: 2
Initializing random number generator from current time

```

```

root@nodo1: /home/dylan
max: 47.54
95th percentile: 4.57
sum: 119942.00

Threads fairness:
  events (avg/stddev): 17705.0000/0.00
  execution time (avg/stddev): 59.9710/0.00

root@nodo1: /home/dylan# sysbench --threads=2 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 oltp_update_non_index run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 2
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read: 0
    write: 34861
    other: 1660
    total: 36521
  transactions: 36521 (608.64 per sec.)
  queries: 36521 (608.64 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total times: 60.0028s
  total number of events: 36521

Latency (ms):
  min: 0.04
  avg: 3.28
  max: 103.28
  95th percentile: 4.41
  sum: 119937.08

Threads fairness:
  events (avg/stddev): 18260.5000/38.50
  execution time (avg/stddev): 59.9685/0.00

root@nodo1: /home/dylan#

```

➤ oltp_write_only

```

Nodo1 (Nodo1 Recien Instalado) [Corriendo] - Oracle VirtualBox
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda
top - 03:13:14 up 32 min, 2 users, load average: 0.21, 0.13, 0.24
Tasks: 122 total, 1 running, 119 sleeping, 2 stopped, 0 zombie
%Cpu(s): 12.7 us, 25.3 sy, 0.0 ni, 30.4 id, 25.1 wa, 0.0 hi, 6.4 si, 0.0 st
MiB Mem : 4414.1 total, 3663.0 free, 556.3 used, 415.0 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3857.8 avail Mem

  PID USER      PR  NI   VIRT   RES    SHR   S  %CPU  %MEM     TIME+ COMMAND
 1343 mysql    20   0 1740848 288592 158200 S   61.7   6.4   6:44.43 mariadb
 1531 root      20   0 165544 14208 11136 S   12.7   0.3   0:00.83 sysbench
   52 root      0 -20   0       0       0 I    1.7   0.0   0:05.16 kworker/0:1H-kblockd
   64 root      0 -20   0       0       0 I    1.7   0.0   0:05.13 kworker/1:1H-kblockd
    1 root      20   0 22176 13128  9288 S    0.3   0.3   0:02.71 systemd
   24 root      20   0   0       0       0 S    0.3   0.0   0:00.28 ksoftirqd/1
 565 systemd+ 20   0  91020  7808  6912 S    0.3   0.2   0:00.45 systemd-timesyn
    2 root      20   0   0       0       0 S    0.0   0.0   0:00.02 kthreadd
    3 root      20   0   0       0       0 S    0.0   0.0   0:00.00 pool_workqueue_release
    4 root      0 -20   0       0       0 I    0.0   0.0   0:00.00 kworker/R-rcu_g
    5 root      0 -20   0       0       0 I    0.0   0.0   0:00.00 kworker/R-rcu_g
    6 root      0 -20   0       0       0 I    0.0   0.0   0:00.00 kworker/R-slab_
    7 root      0 -20   0       0       0 I    0.0   0.0   0:00.00 kworker/R-nets
   10 root      0 -20   0       0       0 I    0.0   0.0   0:00.00 kworker/0:0H-events_highpri
   11 root      20   0   0       0       0 I    0.0   0.0   0:00.00 kworker/u4:0-ext4-nsv-conversion
   12 root      0 -20   0       0       0 I    0.0   0.0   0:00.00 kworker/R-nm_pe
   13 root      20   0   0       0       0 I    0.0   0.0   0:00.00 rcu_tasks_kthread
   14 root      20   0   0       0       0 I    0.0   0.0   0:00.00 rcu_tasks_rude_kthread
   15 root      20   0   0       0       0 I    0.0   0.0   0:00.00 rcu_tasks_trace_kthread
   16 root      20   0   0       0       0 S    0.0   0.0   0:00.79 ksoftirqd/0
   17 root      20   0   0       0       0 I    0.0   0.0   0:00.16 rcu_preempt
   18 root      rt  0   0       0       0 S    0.0   0.0   0:00.01 migration/0
   19 root     -51   0   0       0       0 S    0.0   0.0   0:00.00 idle_inject/0
   20 root      20   0   0       0       0 S    0.0   0.0   0:00.00 cpuhp/0
   21 root      20   0   0       0       0 S    0.0   0.0   0:00.00 cpuhp/1
   22 root     -51   0   0       0       0 S    0.0   0.0   0:00.00 idle_inject/1
   23 root      rt  0   0       0       0 S    0.0   0.0   0:00.02 migration/1
   29 root      20   0   0       0       0 S    0.0   0.0   0:00.03 kdevtmpfs
   30 root      0 -20   0       0       0 I    0.0   0.0   0:00.00 kworker/R-net_
   32 root      20   0   0       0       0 S    0.0   0.0   0:00.00 kauditd
   33 root      20   0   0       0       0 S    0.0   0.0   0:00.00 khungtaskd

root@nodo1: /home/dylan
Number of threads: 2
Initializing random number generator from current time

```

```

root@nodo1:/home/dylan
max: 103.28
95th percentile: 4.41
sum: 119937.08

Threads fairness:
  events (avg/stddev): 18260.5000/38.50
  execution time (avg/stddev): 59.9685/0.00

root@nodo1:/home/dylan# sysbench --threads=2 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 olt_write_only run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 2
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read: 0
    write: 123643
    other: 63398
    total: 189042
  transactions: 31507 (525.07 per sec.)
  queries: 189042 (3150.44 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total time: 60.0036s
  total number of events: 31507

Latency (ms):
  min: 1.69
  avg: 3.81
  max: 44.15
  95th percentile: 6.21
  sum: 119939.76

Threads fairness:
  events (avg/stddev): 15753.5000/28.50
  execution time (avg/stddev): 59.9699/0.00

root@nodo1:/home/dylan#

```

➤ select_random_points

```

Nodo1 [Nodo1 Recien Instalado] [Corriendo] - Oracle VirtualBox
Archivo Maquina Ver Entrada Dispositivos Ayuda
top - 03:13:33 Up 34 min, 2 users, 1088 average: 0.27, 0.28, 0.29
Tasks: 120 total, 1 running, 117 sleeping, 2 stopped, 0 zombie
%Cpu(s): 6.2 us, 4.2 sy, 0.0 ni, 87.5 id, 0.0 wa, 0.0 hi, 2.1 si, 0.0 st
MiB Mem : 4414.1 total, 3661.8 free, 557.4 used, 415.1 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3856.7 avail Mem

  PID USER   PR  NI  VIRT  RES  SHR  S  %CPU  %MEM    TIME+  COMMAND
 1343 mysql  20   0 1740848 290384 158208 S 140.4  6.4  7:20.60 mariadb
 1541 root    20   0 165800 14464 11264 S 30.7  0.3  0:00.98 sysbench
 1170 dylan   20   0 15120 7084 5120 S  0.9  0.2  0:01.62 sshd
    1 root    20   0 22176 13128 9288 S  0.0  0.3  0:02.71 systemd
    2 root    20   0 0 0 0 S  0.0  0.0  0:00.02 kthreadd
    3 root    20   0 0 0 0 S  0.0  0.0  0:00.00 pool_workqueue_release
    4 root    0 -20 0 0 0 I  0.0  0.0  0:00.00 kworker/R-rcu_s
    5 root    0 -20 0 0 0 I  0.0  0.0  0:00.00 kworker/R-rcu_p
    6 root    0 -20 0 0 0 I  0.0  0.0  0:00.00 kworker/R-slub_
    7 root    0 -20 0 0 0 I  0.0  0.0  0:00.00 kworker/R-netns
   10 root    0 -20 0 0 0 I  0.0  0.0  0:00.00 kworker/0:0H-events_highpri
   11 root    20   0 0 0 0 I  0.0  0.0  0:00.00 kworker/u4:0-ext4-rsv-conversion
   12 root    0 -20 0 0 0 I  0.0  0.0  0:00.00 kworker/R-mm_pg
   13 root    20   0 0 0 0 I  0.0  0.0  0:00.00 rcu_tasks_kthread
   14 root    20   0 0 0 0 I  0.0  0.0  0:00.00 rcu_tasks_rude_kthread
   15 root    20   0 0 0 0 I  0.0  0.0  0:00.00 rcu_tasks_trace_kthread
   16 root    20   0 0 0 0 S  0.0  0.0  0:00.93 ksoftirqd/0
   17 root    20   0 0 0 0 I  0.0  0.0  0:00.17 rcu_preempt
   18 root    rt  0 0 0 0 S  0.0  0.0  0:00.01 migration/0
   19 root   -51  0 0 0 0 S  0.0  0.0  0:00.00 idle_inject/0
   20 root    20   0 0 0 0 S  0.0  0.0  0:00.00 cpuhp/0
   21 root    20   0 0 0 0 S  0.0  0.0  0:00.00 cpuhp/1
   22 root   -51  0 0 0 0 S  0.0  0.0  0:00.00 idle_inject/1
   23 root    rt  0 0 0 0 S  0.0  0.0  0:00.02 migration/1
   24 root    20   0 0 0 0 S  0.0  0.0  0:00.32 ksoftirqd/1
   29 root    20   0 0 0 0 S  0.0  0.0  0:00.03 kdevtmpfs
   30 root    0 -20 0 0 0 I  0.0  0.0  0:00.00 kworker/R-inet_
   32 root    20   0 0 0 0 S  0.0  0.0  0:00.00 kauditd
   33 root    20   0 0 0 0 S  0.0  0.0  0:00.00 khungtaskd
   34 root    20   0 0 0 0 S  0.0  0.0  0:00.00 oom_reaper
   36 root    0 -20 0 0 0 I  0.0  0.0  0:00.00 kworker/R-write

root@nodo1:/home/dylan
Number of threads: 2
Initializing random number generator from current time

```

```

root@nodo1:/home/dylan
max: 44.15
95th percentile: 6.21
sum: 119939.76

Threads fairness:
  events (avg/stddev): 15753.5000/28.50
  execution time (avg/stddev): 59.9699/0.00

root@nodo1:/home/dylan# sysbench --threads=2 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 select_random_points run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 2
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read: 1250532
    write: 0
    other: 0
    total: 1250532
  transactions: 1250532 (20841.01 per sec.)
  queries: 1250532 (20841.01 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total time: 60.0017s
  total number of events: 1250532

Latency (ms):
  min: 0.07
  avg: 0.10
  max: 29.43
  95th percentile: 0.13
  sum: 119142.63

Threads fairness:
  events (avg/stddev): 625266.0000/26153.00
  execution time (avg/stddev): 59.5713/0.02

root@nodo1:/home/dylan#

```

➤ select_random_ranges

```

Nodo1 (Nodo1 Recien Instalado) [Corriendo] - Oracle VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda
top - 03:20:21 up 39 min, 2 users, 1080 average: 0.18, 0.27, 0.29
Tasks: 122 total, 2 running, 118 sleeping, 2 stopped, 0 zombie
%Cpu(s): 0.0 us, 0.1 sy, 0.0 ni, 99.7 id, 0.1 wa, 0.0 hi, 0.1 si, 0.0 st
MiB Mem : 4414.1 total, 3661.8 free, 557.3 used, 415.3 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 3856.8 avail Mem

  PID USER      PR  NI  VIRT  RES  SHR  S %CPU  %MEM    TIME+  COMMAND
 1190 dylan    20   0 11944   588  3712  R   0.2   0.1   0:00.00 top
 1340 mysql   20   0 1740848 290304 158208  S   0.2   6.4   0:54.44 mysqld
 1435 root     20   0 0        0      0  I   0.2   0.0   0:02.72 kworker/0:3-ata_sff
    1 root     20   0 22176 13128  9288  S   0.0   0.3   0:02.72 systemd
    2 root     20   0 0        0      0  S   0.0   0.0   0:00.02 kthreadd
    3 root     20   0 0        0      0  S   0.0   0.0   0:00.00 pool_workqueue_release
    4 root     0 -20 0        0      0  I   0.0   0.0   0:00.00 kworker/R-rcu_g
    5 root     0 -20 0        0      0  I   0.0   0.0   0:00.00 kworker/R-rcu_p
    6 root     0 -20 0        0      0  I   0.0   0.0   0:00.00 kworker/R-slub_
    7 root     0 -20 0        0      0  I   0.0   0.0   0:00.00 kworker/R-netns
   10 root     0 -20 0        0      0  I   0.0   0.0   0:00.00 kworker/0:0H-events_highpri
   11 root     20   0 0        0      0  I   0.0   0.0   0:00.00 kworker/u4:0-ext4-rsv-conversion
   12 root     0 -20 0        0      0  I   0.0   0.0   0:00.00 kworker/R-mm_pe
   13 root     20   0 0        0      0  I   0.0   0.0   0:00.00 rcu_tasks_kthread
   14 root     20   0 0        0      0  I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
   15 root     20   0 0        0      0  I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
   16 root     20   0 0        0      0  S   0.0   0.0   0:00.93 ksoftirqd/0
   17 root     20   0 0        0      0  I   0.0   0.0   0:00.17 rcu_preempt
   18 root    rt   0 0        0      0  S   0.0   0.0   0:00.01 migration/0
   19 root    -51  0 0        0      0  S   0.0   0.0   0:00.00 idle_inject/0
   20 root     20   0 0        0      0  S   0.0   0.0   0:00.00 cpuhp/0
   21 root     20   0 0        0      0  S   0.0   0.0   0:00.00 cpuhp/1
   22 root    -51  0 0        0      0  S   0.0   0.0   0:00.00 idle_inject/1
   23 root    rt   0 0        0      0  S   0.0   0.0   0:00.82 migration/1
   24 root     20   0 0        0      0  S   0.0   0.0   0:00.32 ksoftirqd/1
   29 root     20   0 0        0      0  S   0.0   0.0   0:00.03 kdevtmpfs
   30 root     0 -20 0        0      0  I   0.0   0.0   0:00.00 kworker/R-inet_
   32 root     20   0 0        0      0  S   0.0   0.0   0:00.00 kauditd
   33 root     20   0 0        0      0  S   0.0   0.0   0:00.00 khungtaskd
   34 root     20   0 0        0      0  S   0.0   0.0   0:00.00 oom_reaper
   36 root     0 -20 0        0      0  I   0.0   0.0   0:00.00 kworker/R-write

root@nodo1:/home/dylan
Number of threads: 2
Initializing random number generator from current time

```

```
root@nod01: /home/dylan
max: 29.43
95th percentile: 0.13
sum: 119142.63

Threads fairness:
  events (avg/stddev): 625266.0000/26153.00
  execution time (avg/stddev): 59.5713/0.02

root@nod01:/home/dylan# sysbench --threads=2 --time=60 --rate=0 --db-driver=mysql --mysql-user=root --events=0 select_random_ranges run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 2
Initializing random number generator from current time

Initializing worker threads...

Threads started!

SQL statistics:
  queries performed:
    read: 1273466
    write: 0
    other: 0
    total: 1273466
  transactions: 1273466 (21223.05 per sec.)
  queries: 1273466 (21223.05 per sec.)
  ignored errors: 0 (0.00 per sec.)
  reconnects: 0 (0.00 per sec.)

General statistics:
  total time: 60.0016s
  total number of events: 1273466

Latency (ms):
  min: 0.07
  avg: 0.09
  max: 15.87
  95th percentile: 0.13
  sum: 119083.26

Threads fairness:
  events (avg/stddev): 636733.0000/18197.00
  execution time (avg/stddev): 59.5416/0.01

root@nod01:/home/dylan#
```

Conclusiones

- ✓ Se logró instalar y configurar Galera 4 Cluster con MariaDB en Ubuntu Server.
- ✓ Se verificó la correcta operación de la base de datos.
- ✓ Las pruebas con sysbench mostraron que el rendimiento mejora al aumentar el número de cores utilizados.
- ✓ Debido a la configuración con un solo nodo, no se pudieron realizar pruebas de replicación.