

MySQL 8 Performance Benchmarking on Amazon EC2

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The scope of performance benchmarking

The core objective of this benchmarking exercise is to measure MySQL 8.0 performance, This include INSERTs , SELECTs and complex transaction processing (both INSERTs and SELECTs) without any tuning of MySQL 8 instance's my.cnf. We agree tuning my.cnf will greatly improve performance but in this activity we wanted to benchmark MySQL 8 transaction processing capabilities and technically in MinervaDB we measure performance by Response Time and believe you can build high performance MySQL applications by writing optimal SQL. We have used Sysbench (<https://github.com/MinervaDB/MinervaDB-Sysbench> release 1.0.20) for this benchmarking activity. **This is not a paid / sponsored benchmarking effort by any of the software or hardware vendors, We will remain forever an vendor neutral and independent web-scale database infrastructure operations company with core expertise in performance, scalability, high availability and database reliability engineering.**

Amazon EC2 Infrastructure used in the performance benchmarking

Instance	vCPU	Mem (GiB)	Local Storage (GB)	Network Bandwidth	EBS Bandwidth (Mbps)
r6gd.4xlarge	16	128	1 x 950 NVMe SSD	Up to 10	4,750
r6gd.8xlarge	32	256	1 x 1900 NVMe SSD	12	9,000
r6gd.12xlarge	48	384	2 x 1425 NVMe SSD	20	13,500
r6gd.16xlarge	64	512	2 x 1900 NVMe SSD	25	19,000
r6gd.metal	64	512	2 x 1900 NVMe SSD	25	19,000

Benchmarking OLTP INSERT performance on MySQL 8.0 (for InnoDB only) using Sysbench

GENERATE DATA FOR BENCHMARKING OLTP INSERT PERFORMANCE

```
# sysbench oltp_insert.lua --threads=100 --time=1800 --table-size=100000000 --db-driver=mysql --mysql-db=test --mysql-socket=/var/run/mysqld/mysqld.sock --mysql-user=root --mysql-password=USEYOURPASSWORD --mysql-storage-engine=InnoDB prepare
```

BENCHMARKING MYSQL 8 FOR OLTP INSERT PERFORMANCE

```
# sysbench oltp_insert.lua --threads=100 --time=1800 --table-size=100000000 --db-driver=mysql --mysql-db=test --mysql-socket=/var/run/mysqld/mysqld.sock --mysql-user=root --mysql-password=USEYOURPASSWORD --mysql-storage-engine=InnoDB run
```

RESULTS

Instance	READs / Second	WRITEs / Second	Total Transactions	Total Events	Duration
r6gd.4xlarge	0	5182	5182	5182000000	30 minutes
r6gd.8xlarge	0	6329	6329	6329000000	30 minutes
r6gd.12xlarge	0	7362	7362	7362000000	30 minutes
r6gd.16xlarge	0	9268	9268	9268000000	30 minutes
r6gd.metal	0	11593	11593	11593000000	30 minutes

CLEAN-UP MYSQL 8 OLTP INFRASTRUCTURE AFTER INSERT PERFORMANCE BENCHMARKING

```
# sysbench oltp_insert.lua --threads=100 --time=1800 --table-size=100000000 --db-driver=mysql --mysql-db=test --mysql-socket=/var/run/mysqld/mysqld.sock --mysql-user=root --mysql-password=USEYOURPASSWORD --mysql-storage-engine=InnoDB cleanup
```

Benchmarking OLTP READ-ONLY performance on MySQL 8.0 (for InnoDB only) using Sysbench

GENERATE DATA FOR BENCHMARKING OLTP READ-ONLY PERFORMANCE

```
# sysbench oltp_read_only.lua --threads=100 --time=1800 --table-size=100000000 --db-driver=mysql --mysql-db=test --mysql-socket=/var/run/mysqld/mysqld.sock --mysql-user=root --mysql-password=USEYOURPASSWORD --mysql-storage-engine=InnoDB prepare
```

BENCHMARKING MYSQL 8 FOR OLTP READ-ONLY PERFORMANCE

```
# sysbench oltp_read_only.lua --threads=100 --time=1800 --table-size=100000000 --db-driver=mysql --mysql-db=test --mysql-socket=/var/run/mysqld/mysqld.sock --mysql-user=root --mysql-password=USEYOURPASSWORD --mysql-storage-engine=InnoDB run
```

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RESULTS

Instance	READs / Second	WRITEs / Second	Total Transactions	Total Events	Duration
r6gd.4xlarge	7159	0	7159	7159000000	30 minutes
r6gd.8xlarge	9426	0	9426	9426000000	30 minutes
r6gd.12xlarge	10319	0	10319	10319000000	30 minutes
r6gd.16xlarge	11872	0	11872	11872000000	30 minutes
r6gd.metal	12591	0	12591	12591000000	30 minutes

CLEAN-UP MYSQL 8 OLTP INFRASTRUCTURE AFTER READ-ONLY PERFORMANCE BENCHMARKING

```
# sysbench oltp_read_only.lua --threads=100 --time=1800 --table-size=100000000 --db-driver=mysql --mysql-db=test --mysql-socket=/var/run/mysqld/mysqld.sock --mysql-user=root --mysql-password=USEYOURPASSWORD --mysql-storage-engine=InnoDB cleanup
```

Benchmarking OLTP READ-WRITE performance on MySQL 8.0 (for InnoDB only) using Sysbench

GENERATE DATA FOR BENCHMARKING OLTP READ-WRITE PERFORMANCE

```
# sysbench oltp_read_write.lua --threads=100 --time=1800 --table-size=100000000 --db-driver=mysql --mysql-db=test --mysql-socket=/var/run/mysqld/mysqld.sock --mysql-user=root --mysql-password=USEYOURPASSWORD --mysql-storage-engine=InnoDB prepare
```

BENCHMARKING MYSQL 8 FOR OLTP READ-WRITE PERFORMANCE

```
# sysbench oltp_read_write.lua --threads=100 --time=1800 --table-size=100000000 --db-driver=mysql --mysql-db=test --mysql-socket=/var/run/mysqld/mysqld.sock --mysql-user=root --mysql-password=USEYOURPASSWORD --mysql-storage-engine=InnoDB run
```

RESULTS

Instance	READs / Second	WRITEs / Second	Total Transactions	Total Events	Duration
r6gd.4xlarge	6859	5156	13312	13312000000	30 minutes
r6gd.8xlarge	7935	6471	14406	14406000000	30 minutes
r6gd.12xlarge	9614	8327	17941	17941000000	30 minutes
r6gd.16xlarge	11738	10581	22319	22319000000	30 minutes
r6gd.metal	13952	11742	25694	25694000000	30 minutes

CLEAN-UP MYSQL 8 OLTP INFRASTRUCTURE AFTER READ-WRITE PERFORMANCE BENCHMARKING

```
# sysbench oltp_read_write.lua --threads=100 --time=1800 --table-size=100000000 --db-driver=mysql --mysql-db=test --mysql-socket=/var/run/mysqld/mysqld.sock --mysql-user=root --mysql-password=USEYOURPASSWORD --mysql-storage-engine=InnoDB cleanup
```

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Conclusion

We at MinervaDB conduct MySQL performance benchmarking regularly to share with our customers and other community members about optimal capacity planning and sizing of their Database Infrastructure (both on-premises and cloud). The core objective of this exercise is knowledge sharing and research, All value benefits and process improvements listed here are intended for information purpose only, and may not be incorporated into any contract. This document is not a commitment to delivery any material, code or functionality, and should not be relied upon in making purchasing decision.

FOR MORE INFORMATION

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