



## Boost MariaDB online transaction processing performance with new Microsoft Azure Eds v5 VMs featuring 3rd Generation Intel Xeon Scalable processors

The new VMs supported a significantly higher transaction rate than older Eds v4 VMs

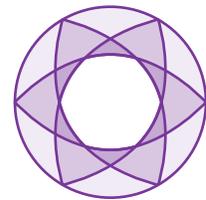
If your organization is currently running Eds v4 series Microsoft Azure VMs for its MariaDB database work, it may be time for an upgrade. Newer VMs backed by newer Intel processors can offer a significant performance increase that can help support business growth.

At Principled Technologies, we tested two series of memory-optimized Microsoft Azure VMs: older Eds v4 VMs featuring 2nd Generation Intel® Xeon® Scalable processors, and newer VMs featuring 3rd Generation Intel Xeon Scalable processors. We compared these VMs using an online transaction processing (OLTP) workload running on MariaDB, an open-source relational database management system. In each test, we found that the newer Eds v5 series VMs performed significantly better than the older Eds v4 series VMs, achieving up to 1.40 times the rate of transactions per second.



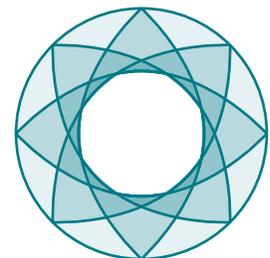
**1.40x the transactions per second**

on VMs with 8 vCPUs and a 64GB database



**1.31x the transactions per second**

on VMs with 16 vCPUs and a 128GB database



**1.27x the transactions per second**

on VMs with 64 vCPUs and a 512GB database

## How we tested

We compared the following series of memory-optimized VMs from Microsoft Azure:

- **Eds v5 VMs**  
featuring 3rd Generation Intel Xeon Platinum 8307C (Ice Lake) processors
- **Eds v4 VMs**  
featuring 2nd Generation Intel Xeon Platinum 8272CL (Cascade Lake) processors

## VM specifications

Figure 1 illustrates key information on the VMs we tested. (For more detailed hardware and software configuration information, see the [Science behind this report](#).) To represent a range of real-world needs, we tested three sizes of VMs from each series.

## Database sizing

We wanted each VM's resources to be appropriately sized for the workload it ran. We also wanted to ensure the storage was not a performance bottleneck, and that the processor did most of the work. To accomplish this, we ensured each database could fit within the allocated RAM for each VM. Though this is not always possible, we generally find that sizing a database to fit within RAM results in strong performance while lowering the cost of cloud storage.

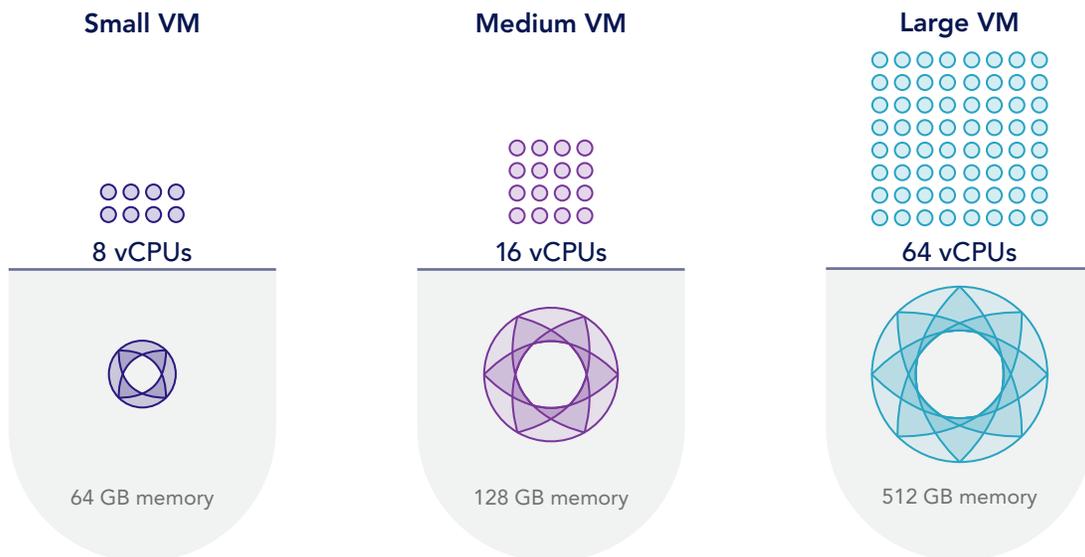


Figure 1: Key VM specifications. Source: Principled Technologies.

## Workload: HammerDB TPROC-C

OLTP workloads are business critical for many types of organizations, such as online retail stores, financial institutions, and parcel delivery services. We used the TPROC-C test from the HammerDB benchmarking suite to test the OLTP performance of each memory-optimized Azure VM. Though the HammerDB developers derived TPROC-C from the TPC-C standard, it is not a full implementation of TPC-C—therefore, the results in this paper are not directly comparable to results officially published by TPC.

## Our results: Support more work with new Eds v5 VMs

OLTP workloads support everyday business interactions such as financial transactions, customer relationship management (CRM) systems, retail sales, and more. If database transactions are the heart of your business' operations, you need a robust cloud solution to keep money flowing. Our tests targeted a range of VMs that could support businesses of various sizes. Figures 2 through 4 show the results of our MariaDB testing. In each case, Eds v5 series VMs featuring 3rd Generation Intel Xeon Scalable processors significantly outperformed Eds v4 series VMs that used 2nd Generation Intel Xeon Scalable processors.

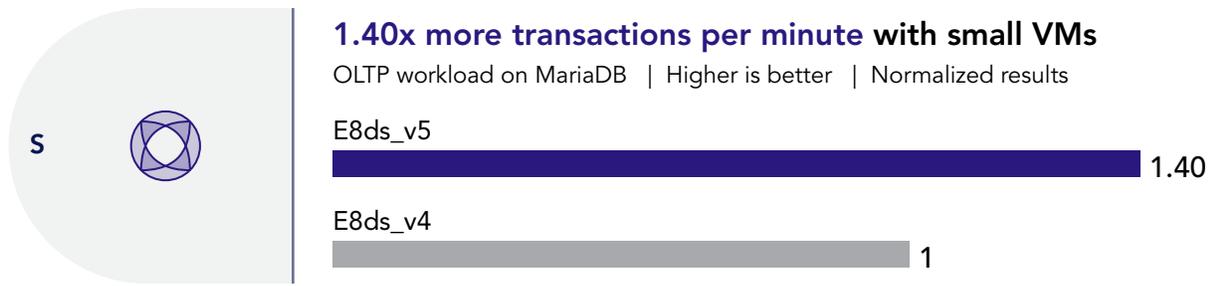


Figure 2: Comparison of OLTP performance between E8ds\_v5 and E8ds\_v4 VMs, normalized to the performance of the E8ds\_v4 VM. Source: Principled Technologies.

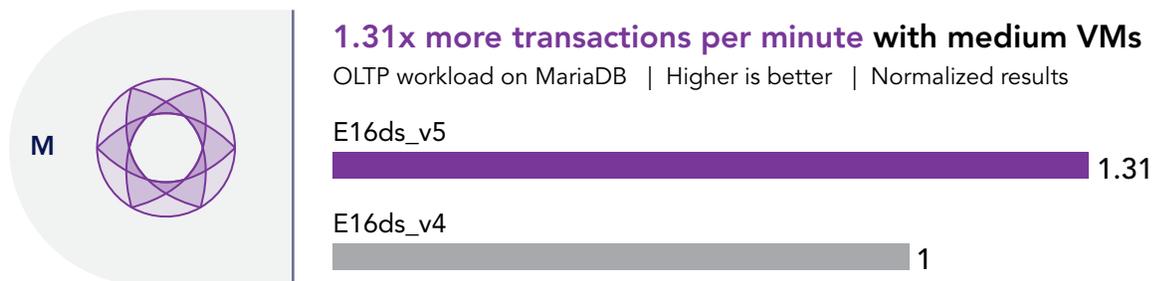


Figure 3: Comparison of OLTP performance between E16ds\_v5 and E16ds\_v4 VMs, normalized to the performance of the E16ds\_v4 VM. Source: Principled Technologies.

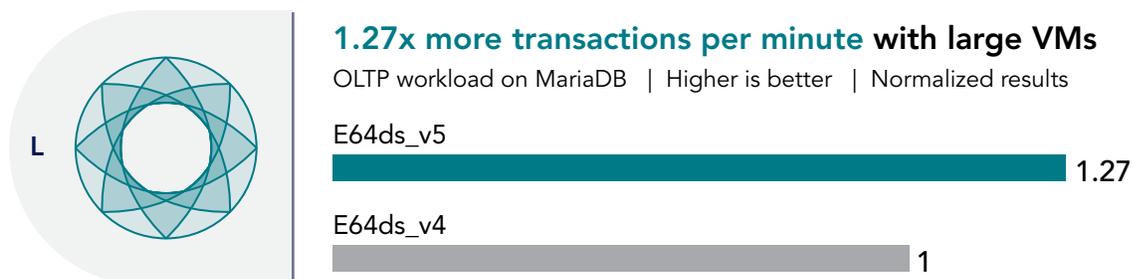


Figure 4: Comparison of OLTP performance between E64ds\_v5 and E64ds\_v4 VMs, normalized to the performance of the E64ds\_v4 VM. Source: Principled Technologies.

### About MariaDB

MariaDB is a popular open-source relational database management system. The latest release of MariaDB has a host of new features, including compatibility with Oracle Database and Temporal Data Tables.<sup>1</sup> To learn more, visit <https://mariadb.org/about/>.



## Conclusion

If it's been a while since last you've looked into upgrading your business' Microsoft Azure VMs, you may be pleasantly surprised to learn that the latest series of Eds v5 VMs featuring 3rd Generation Intel Xeon Scalable processors could significantly increase the level of memory-intensive database work you can perform. In our OLTP tests on MariaDB, new Eds v5 VMs performed up to 1.40x better than older Eds v4 VMs featuring 2nd Generation Intel Xeon Scalable processors. By upgrading, your organization could achieve a greater level of work to support growth in the near future, and potentially handle its current level of work on fewer VMs.

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1 "MariaDB Foundation - MariaDB.org," accessed July 6, 2021, <https://mariadb.org/>

Read the science behind this report at <http://facts.pt/GR6psHx> ►



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