Microsoft Azure® Esv5 Virtual Machines Delivered up to 48% Higher Microsoft SQL Server Online Transaction Processing Performance Than Esv4 Virtual Machines

Microsoft SQL

Better Support Users with 48% Higher SQL Server OLTP Performance with 8-vCPU Esv5 VMs

vs. Esv4 VMs

Better Support Users with 33% Higher SQL Server OLTP Performance with 16-vCPU Esv5

vs. Esv4 VMs

VMs Featuring 3rd Gen Intel® Xeon® Scalable Processors Handled More New Orders per Minute than VMs with Previous-Gen Processors

Companies rely on online transaction processing (OLTP) workloads for a range of activities, from retail sales to ordering to customer service management. Choosing cloud instances that process these transactions at a speedy clip is a great way to improve the experience for your customers and employees. If you're shopping for a public cloud solution to host your OLTP workloads, keep in mind that instances can perform very differently depending on their underlying hardware. For example, Microsoft Azure Esv5-series VMs featuring 3rd Gen Intel® Xeon® Scalable processors can outperform Esv4 VMs enabled by 2nd Gen Intel Xeon Scalable processors.

When we conducted benchmark tests of these two series, we learned that Esv5 VMs enabled by 3rd Gen Intel Xeon Scalable processors delivered up to 48% better Microsoft SQL Server OLTP performance. That advantage could deliver a smoother experience for your users.

Comparing Smaller Azure VMs

Our tests used TPROC-C, an open-source OLTP workload from the HammerDB benchmark, to measure the performance of multiple sizes of two Azure series. TPROC-C generates a metric of new orders per minute (NOPM). (Note that TPROC-C results are in no way comparable to official TPC-audited results.) As Figure 1 shows, an organization that chose 8-vCPU Esv5 VMs enabled by 3rd Gen Intel Xeon Scalable processors would enjoy 48% better performance than one that chose the same size Esv4 VMs enabled by 2nd Gen Intel Xeon Scalable processors. For VMs with 16 vCPUs, the Esv5 VMs would deliver 33% more performance than the Esv4 VMs featuring the previous-generation processors.

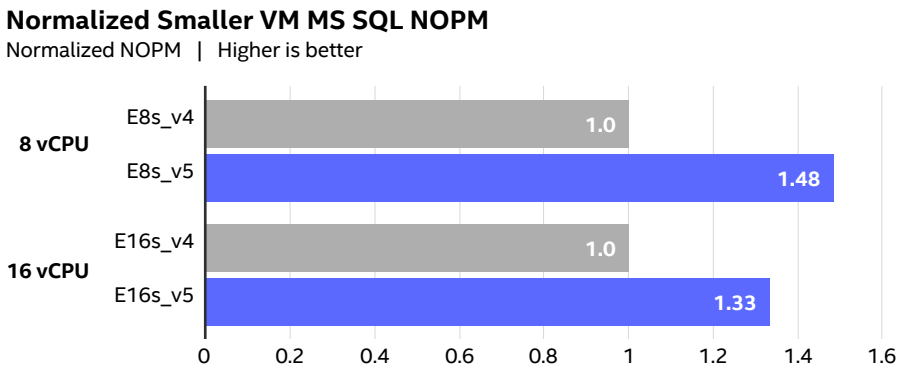

Figure 1. Relative TPROC-C performance in new orders per minute of the 8-vCPU and 16-vCPU Azure Esv5 and Esv4 virtual machines. Higher is better.

Comparing Larger Azure VMs

In Figure 2, we show how larger VMs stack up. By opting for 32-vCPU Esv5 VMs enabled by 3rd Gen Intel® Xeon® Scalable processors rather than 32-vCPU Esv4 VMs enabled by previous-generation processors, you could enjoy 22% higher performance. Selecting 48-vCPU Esv5 VMs could allow you to reap 12% better performance than the Esv4 VMs would deliver.

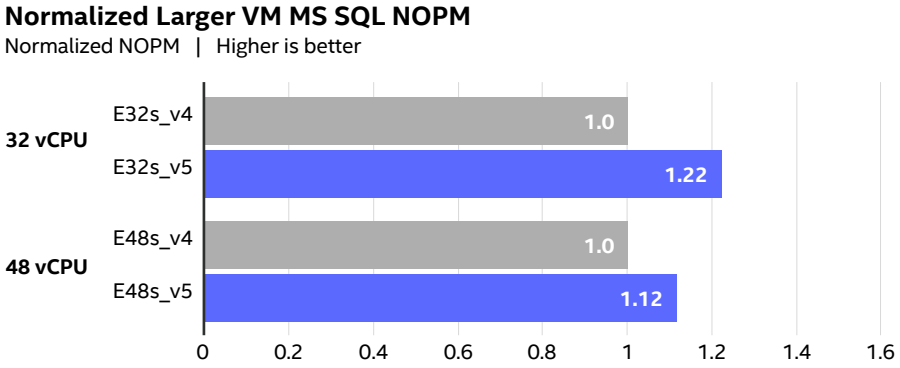

Figure 2. Relative TPROC-C performance in new orders per minute of the 32-vCPU and 48-vCPU Azure Esv5 and Esv4 virtual machines. Higher is better.

Conclusion

Our testing revealed that AWS Esv5 instances with 3rd Gen Intel Xeon Scalable processors can allow your applications to perform at a rate up to 48% better than that of Esv4 instances with 2nd Gen Intel Xeon Scalable processors. Running your MySQL OLTP workloads on cloud instances that support a higher rate of orders per minute is a smart business move that can reduce wait time—and the frustration that accompanies it—for your customers and employees.

Learn More

To begin running your OLTP workloads on Microsoft Azure Esv5 virtual machines with 3rd Gen Intel Xeon Scalable processors, visit https://docs.microsoft.com/en-us/azure/virtual-machines/ev5-esv5-series.

Single VM tests by Intel on 1/5/2022. All VMs configured with Windows Server 2019 Datacenter, Version (1809) 17763.1757, Microsoft SQL Server Enterprise 15.0.4153.1, Windows HammerDB 4.2, a 5000 IOPS, 200Mbps 1xp30 disk for log files, and all tests were in the Azure EastUS region. Instance details: E8s_v5: Intel® Xeon® Platinum 8370C CPU @ 2.80GHz, 8 cores, 32GB memory, 12500 Mbps NW bandwidth, 2x5000 IOPS, 200Mbps 2xp30 for data/tempdb; E8s_v4: Intel® Xeon® Platinum 8272CL CPU @ 2.60GHz, 8 cores, 32GB memory, 12500 Mbps NW bandwidth, 2x5000 IOPS, 200Mbps 2xp30 for data/tempdb; E16s_v5: Intel® Xeon® Platinum 8370C CPU @ 2.80GHz, 16 cores, 64GB memory, 12500 Mbps NW bandwidth, 3x7500 IOPS, 250Mbps 3xp40 for data/tempdb; E16s_v4: Intel® Xeon® Platinum 8272CL CPU @ 2.60GHz, 16 cores, 64GB memory, 12500 Mbps NW bandwidth, 3x7500 IOPS, 250Mbps 3xp40 for data/tempdb; E32s_v5: Intel® Xeon® Platinum 8370C CPU @ 2.80GHz, 32 cores, 128GB memory, 16000 Mbps NW bandwidth, 4x7500 IOPS, 250Mbps 4xp40 for data/tempdb; E32s_v4: Intel® Xeon® Platinum 8272CL CPU @ 2.60GHz, 32 cores, 128GB memory, 16000 Mbps NW bandwidth, 4x7500 IOPS, 250Mbps 4xp40 for data/tempdb; E48s_v5: Intel® Xeon® Platinum 8370C CPU @ 2.80GHz, 48 cores, 192GB memory, 24000 Mbps NW bandwidth, 7x7500 IOPS, 250Mbps 7xp40 for data/tempdb; E48s_v4: Intel® Xeon® Platinum 8272CL CPU @ 2.60GHz, 48 cores, 192GB memory, 24000 Mbps NW bandwidth, 7x7500 IOPS, 250Mbps 7xp40 for data/tempdb.

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