Micron® SolidScale™ Platform Architecture for SQL Server®

SQL Server® Soars to New Heights with Micron® SolidScale™ Platform-Based Infrastructure

Databases are the backbone of almost every company and their success is tied to its ability to store, retrieve and manipulate the data stored in these important applications. As the glut of data increases (predicted by IDC to be up to 44 zettabytes by 2020) it is going to be critical that the data center infrastructure changes to meet the demands to manage this immense amount of data. Microsoft SQL Server® is one of the most widely used database solutions for enterprises and their critical data. From transaction processing solutions that require low latency, to data warehouses that require large capacity and maximized throughput, SQL Server covers the gamut.

Micron is looking beyond today's standards for data storage. With the Micron SolidScale™ infrastructure, we leverage open standards technology to unlock the value of your NVMe™ SSDs for all workloads. Micron SolidScale platform is an integrated solution that delivers increased scalability and performance by fully leveraging the performance of your NVMe over an advanced low-latency, high-performance RoCE fabric. SolidScale infrastructure maximizes the utilization of NVMe for your SQL Server deployments, providing easy management of storage resources. By decoupling compute and storage scalability, SolidScale infrastructure allows you to optimize cost, scale and performance.

While NVMe provides the performance boost SQL Server wants, it has been limited to only a few devices that can fit in individual servers. Moving these NVMe devices into a SolidScale infrastructure allows you to scale well beyond what was possible before. SolidScale provides access to thousands of NVMe devices with the flexibility to create logical volumes of any size supportable by your operating system without sacrificing performance. For SQL Server, this means potentially faster results than legacy SQL Server storage solutions. By providing each SQL Server instance with access to more devices than a typical server-local storage deployment, you can get better overall results from the same number of SQL Server nodes.

In preliminary tests using an early preview of the SolidScale platform and using a set of data warehouse focused queries similar to those used in the TPC-h benchmark with SQL Server for Linux beta, we saw very promising results.

Our tests focused on storage performance and did not use any additional caching typically used in an audited TPC benchmark. With this test environment, we ran three different tests and were able to fully utilize a single 100Gb RoCE port used in our SQL Server node, reaching an average peak of 11 GB/s of throughput![1] While accomplishing this, our SolidScale node SSDs had plenty of headroom in terms of IOPS and throughput available to drive more SQL Server transactions. As we continue to develop this technology by introducing multiple fabric ports and enabling multi-pathing features, we are excited to see how SQL Server performance increases.

Micron's SolidScale infrastructure brings together the latest server and storage technologies with leading edge software to provide an exciting scale-out server and storage infrastructure that provides virtual storage services that allows companies to continue to scale their legacy and next-generation data center applications to new heights. The SolidScale platform's performance, data services, and flexible deployment options allow your SQL Servers solutions soar.

11 GB/s of Throughput

Learn More

Interested in participating in the SolidScale platform early access program? Or, are you an OEM company interested in partnering with Micron to extend the SolidScale architecture across your hardware platforms? Visit micron.com/solidscale or send an email to solidscale@micron.com.

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1 Test run using 3x SolidScale nodes hosting 12x Micron 2.4TB 9100MAX NVMe SSDs per node, RAID10. SQL Server for Linux 14.0.405.200, server running dual-socket Intel® Xeon® E5-2960v3, 256GB memory, 1x100Gb RoCE port, Centos 7.3.

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