As one of the leading database platforms for business—from small and medium organizations to large enterprises—Microsoft SQL Server is at the center of operations for Online Transaction Processing (OLTP). For these organizations, computer system performance is critical to maximize transaction throughput, and reliability and high availability (HA) are necessary to keep business flowing smoothly. With mainstream support for Microsoft SQL Server 2008 and Microsoft SQL Server 2008 R2 ending in 2019, customers need to plan their migration to a platform that will not only continue to serve their businesses, but easily scale with them as they grow.

DataON S2D-5108 servers are part of Intel® Select Solutions for Microsoft SQL Server, giving businesses powerful OLTP performance. DataON’s solution with a two-node cluster is optimized for Microsoft SQL 2017, achieving 10 million transactions per minute1 with automatic failover to keep the business operating. The clusters can be configured as a standalone SQL application resource connected to the rest of the data center’s systems, or as a hyper-converged infrastructure running Microsoft SQL Server 2017 alongside Microsoft Storage Spaces Direct® 2016 and 2019 and other enterprise applications. In either deployment, the solution is tuned for business performance and built for high availability.

**The Challenge**

- Microsoft SQL Server® OLTP system performance is critical
- Business continuity depends on maximizing transaction throughput, reliability, and high availability (HA) systems
- Customers need to plan for Microsoft SQL Server 2008 to 2017 migration

**The Solution**

- Window Server® 2019 Storage Spaces Direct clusters optimized for Microsoft SQL 2017
- Validated Intel® Select Solutions with a DataON HCI-based SQL cluster
- SQL solutions tuned for business performance and built for high availability

**Featured Benefits**

**Speed.** 2nd Generation Intel® Xeon® Scalable processors offer the highest performance of Intel® processors for demanding data center workloads, delivering fast data processing and access to data with reduced blocking.

**Capacity.** In a hyper-converged infrastructure, locally attached storage devices are aggregated across nodes to increase capacity without sacrificing performance.

**Simplicity.** No external enclosures and storage cabling are needed with DataON’s SQL Failover Clustering instance. Combined with mirrored volumes the system ensures SQL gets the highest throughput to maximize performance on mixed random IOPS workloads.

**Cost Savings.** Consolidating multiple instances on a single cluster helps reduce licensing fees and administrative overhead.

**Flexibility.** Multiple configurations allow deploying the best solution for today and in the future.
Intel Select Solutions for Microsoft SQL Server 2017 with DataON S2D-5108 servers and Microsoft Storage Spaces Direct

DataON S2D-5108 servers for Microsoft SQL Server 2017 are offered in a two-node configuration with 24-core Intel® Xeon® Platinum 8260 processors (Table 1). This configuration is designed for high performance on mixed workloads.

The DataON S2D-5108 servers use only Intel® SSD Data Center Series drives with the PCIe* interface for NVMe. Using NVMe delivers maximum storage performance with minimal latency in a clustered configuration. DataON’s optimized deployments of Microsoft SQL Server 2017 on Intel®-based platforms delivers over 2x the performance of Microsoft SQL Server 2008 (Figure 2).1

Both configurations are designed to optimize Microsoft SQL Server 2017 performance with automatic failover capability to maintain a highly available database service.

<table>
<thead>
<tr>
<th>Component</th>
<th>Two Nodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>DataON™ Server Node</td>
<td>S2D-5108</td>
</tr>
<tr>
<td>Processor (GHz)/Core</td>
<td>Intel® Xeon® Platinum 8260; 2.4GHz, 24 cores, 2 processors per node</td>
</tr>
<tr>
<td>Memory (GB)</td>
<td>DDR4 384GB</td>
</tr>
<tr>
<td>Raw Storage Intel® SSD DC Series</td>
<td>NVMe 4TB x6</td>
</tr>
<tr>
<td>Usable Storage</td>
<td>2-way Mirror 12TB</td>
</tr>
<tr>
<td>Storage Data Network</td>
<td>RDMA 10GbE</td>
</tr>
</tbody>
</table>

Table 1. Hardware configuration for DataON Database HCI Platform for Microsoft SQL OLTP.*

Figure 1. DataON S2D-5108 HCI Platform Connections Diagram
The Result

DataON’s two-node cluster solution is optimized for Microsoft SQL* 2017, achieving 10 million transactions per minute1 with automatic fail-over to keep the business operating.

Figure 2. Microsoft SQL Server* 2017 performance compared to Microsoft SQL Server* 2008 using DataON Database HCI Platform for Microsoft SQL OLTP.*1

Fundamental Intel® Technologies

The following technologies help enhance security and performance in DataON Database HCI Platform for Microsoft SQL OLTP:

- **Trusted Platform Module (TPM) 2.0.** Protects the system start-up process by ensuring it is tamper-free before releasing system control to the operating system. TPM 2.0 also provides secured storage for sensitive data, such as security keys and passwords, and it performs encryption and hash functions.

- **Intel® Turbo Boost Technology.** Accelerates processor and graphics performance for peak loads, automatically allowing processor cores to run faster than the rated operating frequency if they’re operating below power, current, and temperature specification limits.

- **Intel® Hyper-Threading Technology (Intel® HT Technology).** Enables multiple threads to run on each core, which ensures that systems use processor resources more efficiently. Intel HT Technology also increases processor throughput, improving overall performance on threaded software.

- **Intel® Speed Shift Technology.** Allows the processor to quickly select its best operating frequency and voltage for optimal performance and power efficiency without intervention from the operating system.

“DataON S2D HCI running Windows Server 2016 for SQL 2017 shows a significant performance boost for data intensive workloads. There are tangible benefits to aggregating locally attached storage across nodes in a cluster. This increases capacity, but it does so without sacrificing performance.”

Melody Zacharias
Microsoft MVP Data Platform

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*1 Microsoft SQL Server is a registered trademark of Microsoft Corporation in the United States and/or other countries.
A Verified Configuration for Optimized Solutions

DataON Database HCI Platform for Microsoft SQL OLTP is a fast path to maximizing database processing with workload-optimized configurations verified for Intel® Xeon® Scalable processors.

About DataON

DataON is the industry-leading provider of solutions for Microsoft Azure Stack HCI, and hyper-converged infrastructure and storage systems optimized for Microsoft Windows Server environments. It has been named to CIO Review's '20 Most Promising Microsoft Solution Providers 2018.' Our company is focused on customers who have made the "Microsoft choice" to deploy Microsoft applications, virtualization, data protection, and hybrid cloud services. Our enterprise-level solutions, delivered as a complete, turnkey experience, are designed to provide the highest level of performance, manageability, and security offered.

For more information on all Intel Select Solutions, visit www.intel.com/selectsolutions.

For more information on DataON servers and solutions, visit www.dataonstorage.com.