Highlights

- Reduces the risk of a typical “do-it-yourself” deployment
- Turn data into meaningful information quickly
- Throughput performance rating of 7,191 MB/s for Rowstore and 1,433/Queries/Hr/TB for Columnstore

Today’s modern data warehouse has evolved from being thought of as a secondary archiving project to a primary one which organizations now depend on for their daily operations. Overnight processing for next day reports are becoming obsolete and now real time reporting and streaming data are the norm. The systems required to support this, however, need to be proven before implemented into a production environment, otherwise, organizations may face disastrous results. This effort includes many decisions with respect to software, hardware selection, configuration, timing and testing. Organization’s often do not have the staffing resources and time required to validate a system that would best fit their business. In response, Microsoft, Supermicro and Seagate have collaborated to provide a tested and preconfigured reference design that will meet the requirements of a wide range of environments with fast and reliable deployment. The SQL Server 2014 Fast Track Data Warehouse reference architecture including the Supermicro SuperServer SYS-4048B-TRFT and the Seagate Nytro flash accelerator card eliminates the complex task of building out an optimized system and removes much of the upfront testing and unknowns of building out an optimized system, state storage. Built with advanced flash capabilities that optimize endurance and reliability, the Nytro card offers an enterprise ready solution. Using a host offload architecture design, the Nytro card reduces server CPU and DRAM dependency leaving these resources for the host and SQL Server Instance to utilize.

Achieve Efficiencies

**Supermicro SuperServer SYS-4048B-TRFT**

Supermicro®, the leading innovator in high-performance, high-efficiency server technology is a premier provider of advanced server Building Block Solutions® for Data Center, Cloud Computing, Enterprise IT, HPC, Big Data / Hadoop and Embedded Systems worldwide. Supermicro’s proven high level of quality and performance has made SuperServers the platform of choice for supercomputer clusters and enterprise databases as well as business-critical, front-end server applications.

**Nytro Flash Accelerator Card**

The Nytro flash accelerator card is a solid state primary storage solution for accelerating SQL Server workloads. The small PCIe foot print provides DBAs the option of easily transforming their storage subsystem to solid state storage.
Workload Optimization

Customers have many hardware choices for their SQL Server 2014 Data Warehouse implementation. Systems made up of fast multi-core processors, memory, and flash storage can be combined to achieve this goal. For the best value of these hardware resources, the system should be optimized and validated.

Rather than trying to achieve the best benchmark score which can expose under or over utilization of components, the SQL Server 2014 Fast Track Data Warehouse reference architecture strives for the best balance of CPU, memory, and storage resources.

Workload Optimization Metrics

Data warehouse workloads consist of loading and processing the data to be consumed. Once the data has been transformed and ready to use, the I/O consists primarily of multiple streams of read operations.

The SQL Server 2014 Fast Track Data Warehouse reference architecture made up of the Supermicro SuperServer SYS-4048B-TRFT and the Seagate Nytro card provides the ability to scale with the performance for concurrent complex read queries.

Summary

Collaboration is key when developing a successful SQL Server 2014 Data Warehouse reference architecture. Microsoft, Supermicro and Seagate have based the above reference architecture on joint innovation with a goal of building a fully-optimized and reliable solution for quick and trusted deployment. Contact Supermicro to see how this reference architecture can optimize your environment.

Additional Resources

SQL Server Fast Track Data Warehouse

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Or follow us! /sqlserver

Reference Architecture Highlights

Rated User Data Capacity
55TB

Row Store Throughput
7,191 MB/s

Columnstore Throughput
1,433 Queries/Hr/ TB
## Primary Metrics

<table>
<thead>
<tr>
<th></th>
<th>Rated User Data Capacity</th>
<th>Row Store Throughput</th>
<th>Column Store Throughput</th>
<th>Maximum User Data Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>(TB)</td>
<td>55</td>
<td>244</td>
<td>220</td>
<td>66</td>
</tr>
</tbody>
</table>

### Row Store

<table>
<thead>
<tr>
<th>Relative Throughput</th>
<th>Measured Throughput</th>
<th>Measured Scan Rate Physical</th>
<th>Measured Scan Rate Logical</th>
<th>Measured I/O Throughput</th>
<th>Measured CPU (Avg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Queries/Hr/TB)</td>
<td>(MB/Sec)</td>
<td>(MB/Sec)</td>
<td>(MB/Sec)</td>
<td>(%</td>
<td></td>
</tr>
<tr>
<td>244</td>
<td>264</td>
<td>6,495</td>
<td>7,888</td>
<td>7,191</td>
<td>84</td>
</tr>
</tbody>
</table>

### Column Store

<table>
<thead>
<tr>
<th>Relative Throughput</th>
<th>Measured Throughput</th>
<th>Measured Scan Rate Physical</th>
<th>Measured Scan Rate Logical</th>
<th>Measured I/O Throughput</th>
<th>Measured CPU (Avg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Queries/Hr/TB)</td>
<td>(MB/Sec)</td>
<td>(MB/Sec)</td>
<td>(MB/Sec)</td>
<td>(%</td>
<td></td>
</tr>
<tr>
<td>220</td>
<td>1,433</td>
<td>1,130</td>
<td>N/A</td>
<td>N/A</td>
<td>78</td>
</tr>
</tbody>
</table>

The reference configuration is a 2 socket system rated for 25TB using the DWFT V4 methodology.

1. Assumes a data compression ratio of 5:1

2. Percent ratio of the throughput to the row store throughput of the reference configuration.

3. Percent ratio of the throughput to the column store throughput of the reference configuration.

*Reported metrics are based on the qualification configuration which specifies database size and SQL Server memory.