Solution brief

Boost performance of virtualized Microsoft SQL Server

HP ProLiant BL460c Virtual Server Cluster Solution

Higher performance, increased capacity, and ultra-low latency for Microsoft® SQL Server 2014 with HP Read Intensive Mezzanine PCI Express Workload Accelerators for BladeSystem c-Class.

Optimize your workloads
- Server virtualization and VDI
- Databases
- Business intelligence and data mining
- Real-time financial data processing
- Seismic data processing
- Content caching
- 3D animation/rendering
- CAD/CAM

Increase performance and scalability[1]
- Up to 2 million transactions per minute with a single BL460c Gen8 server based on TPC-C like testing
- 33 percent flash capacity increase
- 1.2 TB and 1.6 TB flash storage per HP ProLiant BL460c Gen9 Server Blade
- Up to 25.6 TB flash per HP BladeSystem c7000 enclosure

Increase return on investment
- Save thousands of dollars by reducing the need for large numbers of drives for performance in an array
- Reduce power consumption, cooling, and rack space requirements

HP ProLiant BL460c Solution Elements
Physical servers:
- 2 x HP ProLiant BL460c Gen9 20 or 24-core servers with 128 GB RAM
- VMware® ESXi 5.5
- 2 x 10GbE connections/server
- 1 x 1.2 TB HP RI Mezzanine PCIe Workload Accelerators for BladeSystem c-Class/server blade with VSL 4.1.1 installed

Virtual servers:
- N x VM/server with Windows Server® 2012 R2, MS SQL Server 2014 and Microsoft AlwaysOn
- 2 x Availability Groups for AlwaysOn
- Or, single server blade with N x VM/server for consolidation

Peak performance and real-time data access in a high-availability architecture

Architecting mission-critical application workloads requiring ultra-low latency in a high availability (HA) configuration with four virtual servers can result in lower IOPS, bandwidth bottlenecks, and higher latency throughout. Adding HP Read Intensive (RI) Mezzanine PCI Express (PCIe) Workload Accelerators for BladeSystem c-Class to HP ProLiant BL460c Gen8 or Gen9 Server Blades—coupled with Microsoft SQL Server AlwaysOn—addresses these concerns and increases overall efficiency.

Ultra-low latency SQL Server acceleration

Budget pressures and the demand for real-time data access requires flexible solutions that enable businesses to do more with less, faster. As a result, deploying feature-rich Microsoft SQL Server 2014 within a virtualized VMware environment is the preferred platform for many organizations.

SQL Server 2014 promises 10–30X online transaction processing (OLTP) performance improvement[2] with In-Memory OLTP and 100X query performance[2] with clustered column store indexes (CCI). You can boost performance by up to an additional 70 percent[2] with HP ProLiant BL460c Gen9 Server Blades, and even more by simply adding HP RI Mezzanine PCIe Workload Accelerators.

In a virtual environment, they add flexibility and increase virtual machine performance density, supporting more and larger scale-up SQL Server instances. As a scalable, cost-effective, in-server performance tier, they accelerate real-time data access for faster time-to-insight and drive business productivity. Performance increases can be even greater when migrating from SQL Server 2012 or SQL Server 2008.

Enhanced performance with HP Converged Infrastructure

Available in 1.2 TB and 1.6 TB capacities, HP RI Mezzanine PCIe Workload Accelerators for BladeSystem c-Class are designed for applications requiring high transaction rates and real-time data access with high performance and ultra-low latency. They reduce the performance and scalability constraints of I/O bottlenecks and long latencies that impact database operation and application performance. Taking advantage of new SQL Server 2014 features and leveraging in-server flash can provide additional performance gains of up to 4X[3] over and above that provided by native SQL Server 2014 In-Memory OLTP functionality.
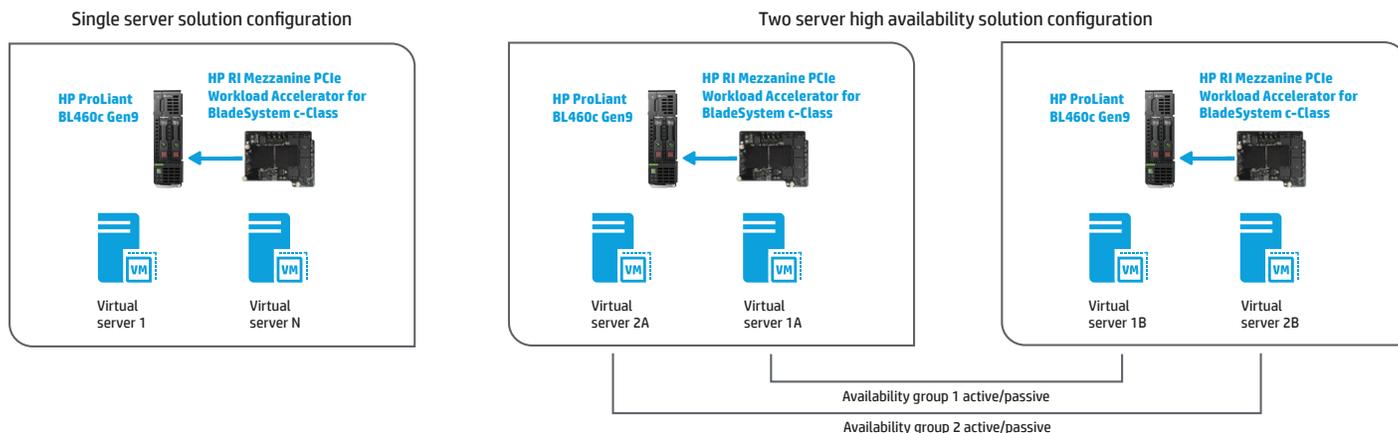
Higher performance density means more transactions per second, faster response times, more users per server, increased user productivity, and reduced costs. Deployed as an in-server performance tier next to the server processors, HP RI Mezzanine PCIe Workload Accelerators for BladeSystem c-Class elevate your blade-based SQL Server 2014 OLTP or data warehouse deployment to a new level.

Built-in flexibility

Designed to accelerate data processing, a single HP BladeSystem c7000 enclosure with HP ProLiant BL460c Gen9 Server Blades can leverage up to 16 HP RI Mezzanine PCIe Workload Accelerators for a total flash storage capacity of up to 25.6 TB (16 x 1.6 TB). Whether using flash for virtual desktop infrastructure (VDI), virtual server workloads, or hosting entire datasets on workload accelerators, you'll enjoy greater flexibility for your VMware Datacenter Infrastructure. And it's simple to size, quick to deploy, and easy to scale according to your business requirements.

[1] SanDisk testing of the HP ProLiant BL460c Gen8 Server with HP RI Mezzanine PCIe Workload Accelerators for BladeSystem c-Class running Microsoft SQL Server 2014 with VMware ESX
[2] download.microsoft.com/download/D/7/D/D7D 64E12-C8E5-4A8C-A104-C945C188FA99/SQL_ Server_2014_Datasheet.pdf
[3] fusionio.com/white-papers/sql-2014-in-memor y-db-with-iomemory/

Figure 1. The HP ProLiant BL460c Gen9 Server blade-based solution for SQL Server 2014 powered by HP 1.6 TB RI Mezzanine PCIe Workload Accelerators

Consistent, reliable, high-performance for your virtualized SQL Server 2014

Single server solution configuration

HP ProLiant BL460c Gen9 — HP RI Mezzanine PCIe Workload Accelerator for BladeSystem c-Class

Virtual server 1 · Virtual server N

Two server high availability solution configuration

HP ProLiant BL460c Gen9 — HP RI Mezzanine PCIe Workload Accelerator for BladeSystem c-Class

Virtual server 2A · Virtual server 1A

HP ProLiant BL460c Gen9 — HP RI Mezzanine PCIe Workload Accelerator for BladeSystem c-Class

Virtual server 1B · Virtual server 2B

Availability group 1 active/passive
Availability group 2 active/passive

Easy to deploy and scale, and highly available

When paired with a second HP BL460c Server Blade in an HA configuration with SQL Server AlwaysOn and Windows Server Failover Clustering (see figure 1), the solution can support your entire data set in-server, providing ultra-low latency SQL 2014 performance acceleration. You can easily scale the solution by adding additional server blades or more blade enclosures to meet your expansion requirements.

Note: HP RI Mezzanine PCIe Workload Accelerators are also compatible for use with all HP ProLiant Gen8 and Gen9 blade servers.

HP 1.2 TB Read Intensive Mezzanine PCIe Workload Accelerator for BladeSystem c-Class (SKU: 794603-B21)

HP 1.6 TB Read Intensive Mezzanine PCIe Workload Accelerator for BladeSystem c-Class (SKU: 794605-B21)

Our solution partners

SanDisk®

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▦ Microsoft

The right solution based on the right technology

HP ProLiant BL460c Gen9 Server Blades
Built for demanding core IT and virtualization workloads, the BL460c Gen9 includes a resilient PCIe backplane that easily handles the high HP RI Mezzanine PCIe Workload Accelerator I/O throughput to drive even the most I/O-intensive applications.

HP RI Mezzanine PCIe Workload Accelerators
SanDisk Fusion ioMemory-based HP RI Mezzanine PCIe Workload Accelerators are architected to dramatically scale and accelerate your Microsoft SQL Server 2014 database and application performance with increased capacity (up to 1.6 TB per server blade) together with ultra-low latency and enterprise-grade reliability.

Microsoft SQL Server AlwaysOn
SQL Server AlwaysOn simplifies high availability deployment and management at either the application, database, or instance level, integrating seamlessly with Windows Server Failover Clustering to protect your business-critical Microsoft SQL Server 2014 applications.

VMware Datacenter Infrastructure
VMware Datacenter Infrastructure allows for a higher degree of server utilization while allowing for consolidation of server hardware.

The benefits are yours—let's do it together

Simple to size, deploy, scale, and manage, the HP ProLiant BL460c Gen9 Blade Server and HP RI Mezzanine PCIe Workload Accelerator solution is a cost-effective way to drastically increase the performance of your VMware Datacenter Infrastructure, translating to a rapid increase in SQL Server 2014 throughput for OLTP, application, and data warehousing workloads, accelerating time-to-decision and increasing business productivity.

Microsoft SQL Server 2014 combined with VMware virtualization technology running on HP Converged Infrastructure can transform the user experience and your business. Why not try it out?

**Learn more at
hp.com/go/WorkloadAccelerator**

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