



Microsoft® SQL Server Fast Track Data Warehouse Reference Architectures on HP servers and storage



Fast-track your access to business intelligence

To respond quickly to changing market conditions, you need immediate access to data. In fact, the speed with which you implement your data warehouse—whether you're upgrading from an outdated version of Microsoft SQL Server or migrating from a different software technology—can be critical to your success in a competitive market. And the time and cost required to design, purchase, and deploy these systems can have a significant impact on your return on investment (ROI).

Identifying the right configuration and deploying complete, scalable data warehouses can be a time-consuming, costly, and error-prone process. Success ultimately depends on the ability to deploy a system that can support an expected level of performance—and then to allow that performance to scale linearly as needed. HP and Microsoft work collaboratively to simplify the SQL Server data warehouse configuration and build process, expediting your time to deployment and, ultimately, your time to business insight.

HP and Microsoft: the right blend of technology and software

Together, Microsoft and HP help you capitalize on information to optimize business outcomes by defining symmetric multiprocessing (SMP) data warehouse reference architectures. The Microsoft SQL Server Fast Track Data Warehouse Reference Architectures on the HP platform take the unknowns out of hardware selection and configuration for SQL Server 2008 data warehouse solutions. They combine best practices and architectural guidance from Microsoft with Microsoft-tested configurations that blend HP servers, storage, and networking.

The reference architectures furnish the right mix of technology and software. They integrate powerful HP ProLiant servers with the robust and affordable HP StorageWorks 2000 Modular Smart Array (MSA2000) family, the superior reliability and proven performance of HP ProCurve Switches 2510 and 2512, and the established data warehouse capabilities of Microsoft SQL Server 2008. The architectures provide server and storage guidance for various data warehouse workloads, so you can spend less time and money choosing the right technology for your specific business needs.

HP ProLiant servers for the Microsoft Fast Track Data Warehouse Reference Architectures. The reference architectures are built on three HP ProLiant server platforms, each targeting a different tier of a SQL Server data warehouse solution:

Server platform	HP ProLiant DL385 G5p	HP ProLiant DL585 G5	HP ProLiant DL785 G5
CPU cores	8 total	16 total	32 total
Optimized, compressed storage	4 TB	8 TB	32 TB
Tested throughput	1,500 MB/s	3,000 MB/s	6,000 MB/s
Ideal scenario	Data marts with a smaller departmental footprint of query activity	The middle tier of data warehouse activity, targeting moderately complex queries and concurrency	Top scale-up model in the HP ProLiant server line, capable of handling higher concurrency and query complexity

Optimizing business outcomes

The Microsoft SQL Server Fast Track Data Warehouse Reference Architectures on the HP platform provide predictable, consistent performance. In addition, they can scale up simply from 4 TB to 32 TB with a smaller footprint than competitors. So you use less rack space in your data center—no matter what its size and location.

The Microsoft SQL Server Fast Track Data Warehouse Reference Architectures on the HP platform help you boost the speed of data access and integration, and:

- **Accelerate data warehouse implementations,** reducing costs and facilitating successful deployments
- **Improve agility and responsiveness and reduce risks** by applying rigorous best practices and industry-standard solutions
- **Reduce total cost of ownership (TCO)** with commoditized hardware, decreased cost of deployment and operation, and faster time to solution

Powered by HP ProLiant servers and the HP StorageWorks 2000 Modular Smart Array

HP ProLiant servers are integrated with the high-performance, affordably scalable HP StorageWorks MSA2000 family. The MSA2000fc is a 4Gb Fibre Channel connected SAN solution that:

- Offers scalability to 99 small form factor (SFF) 2.5" hot-plug drives, providing superior density for mission-critical storage needs

- Utilizes super capacitors and writable compact flash storage—instead of battery backup—for cache data during a power or controller failure
- Allows dual reads when drives are mirrored, enabling tremendous throughput per storage volume—up to 240 MB/s (conversely, some competitors' storage arrays would need two to three times the number of drives to achieve the same throughput)
- Furnishes an easy-to-use, highly accessible Web-based management interface, eliminating the need to run server-side software for configuration

The MSA2000fc is a component of HP's robust HP StorageWorks portfolio. This portfolio also encompasses a broad range of storage solutions, including HP storage software and HP data protection and archiving solutions. Bridging the gap between data and your storage infrastructure, HP StorageWorks makes it easy to store, share, optimize, and protect the information that drives your business.

Accelerating data warehousing with the best price/performance

HP server and storage configurations range from \$14K to \$16K per TB—far less than other proprietary data warehouse platform solutions in the market today. These configurations also provide market-leading pricing and the best price/performance for the SQL Server Fast Track Data Warehouse Reference Architectures.

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Many hardware configurations are ineffective at responding to data warehouse queries because they are tuned for transactional systems. Instead, the Microsoft SQL Server Fast Track Data Warehouse Reference Architectures on the HP platform are balanced and tuned for relational online analytical processing (ROLAP) solutions. This provides superior and scalable performance for data warehouse workloads over traditional random I/O methods.

Improving agility and responsiveness

The Microsoft SQL Server Fast Track Data Warehouse Reference Architectures on the HP platform are designed, tested, and deployed with a rigorous, holistic approach to data warehousing. They derive strength not only from consistent, reliable hardware, but also from the advanced data warehouse enhancements included in SQL Server 2008 Enterprise Edition; these include compression, parallel partitioning, and star join query optimization.

The reference architectures use best practices for Windows® configuration and SQL Server 2008 database management, helping you to build data warehouses that offer predictable performance. An updated methodology offers an optimized set of HP hardware configurations and prescriptive guidance on how to deploy the configurations for increased performance and linear scalability out of the box. This new Fast Track methodology can improve your data warehouse team's agility and responsiveness by enabling rapid deployment and advanced tuning techniques.

Reducing costs with affordable scalability

Microsoft SQL Server Fast Track Data Warehouse Reference Architectures on the HP platform provide you with affordable scalability and can help you build data warehouses cost-effectively. Thanks to SQL Server 2008 Enterprise and HP industry-standard hardware, you can accelerate deployment and take advantage of predictable maintenance efforts. You can:

- Select from different levels of performance, scalability, and price to suit specific business needs
- Choose from two-, four-, or eight-processor configurations
- Implement an industry-standard enterprise-class solution that is a cost-effective alternative to other proprietary business intelligence (BI) solutions available today

More data warehousing and business intelligence tools from HP

Microsoft SQL Server 2008 includes comprehensive, tightly integrated data management and advanced BI functionality out of the box. HP has developed a set of sizer tools to quantify your server and storage resources and help you evaluate configurations for other variations that may better fit your business.

The HP Business Intelligence Sizer for Microsoft SQL Server determines the appropriate servers and hardware configuration for the Extract, Transform, and

While competitors only offer either 2- or 4-processor server configurations, the Microsoft SQL Server Fast Track Data Warehouse Reference Architectures on the HP platform furnish 2-, 4-, and 8-processor configurations. HP also offers *both* hardware and services for the SQL Server Fast Track Data Warehouse—unlike competitors who offer one or the other.

Load tier of SQL Server 2005 Integration Services; the Relational Online Analytical Processing tier; and the Cube Build and Query tier of SQL Server 2005 Analysis Services.

HP and Microsoft: delivering powerful business intelligence solutions

For more than 20 years, HP and Microsoft have been working together to develop and deliver powerful and reliable solutions for the enterprise. HP is the only partner to be named Microsoft's "Global Enterprise Partner of the Year" four times. HP ProLiant is a five-year winner of the *SQL Server Magazine* Editor's Choice Award, and HP ProLiant servers and HP StorageWorks storage are Microsoft reference platforms for demanding SQL Server 2008 data warehouse and BI solutions.

What's more, HP is the single largest technology and service provider to Microsoft, and has nearly 50 percent of the SQL Server market share—double the share of the nearest competitor¹. HP offers:

- Solutions engineering teams that provide extensive customer-focused testing of Microsoft applications on HP storage and servers
- Numerous best practices documents, sizing tools, and planning calculators
- More than 22,000 Microsoft-trained professionals in over 160 countries
- The knowledge, breadth, and depth of HP Business Intelligence Solutions (BIS) consulting services to deliver solutions that meet your BI needs

Find out more

For more information, contact HP, Microsoft, or your local HP/Microsoft SQL Solution Elite partner sales representative today. To find out more about Microsoft SQL Server Fast Track Data Warehouse Reference Architectures on HP Servers and Storage, visit www.hp.com/solutions/microsoft/sqlbiconfigs or www.hp.com/solutions/microsoft/sql.

¹ HP-sponsored primary research conducted by Probit Research, April 2008.

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