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SQL Server®2008

SQL Server® Fast Track Data Warehouse 2.0 for Hewlett-Packard

SQL Server® Fast Track Data Warehouse 2.0 for Hewlett-Packard (HP) Servers, Storage and Networking products take the unknowns out of hardware selection and configuration for SQL Server data warehouse solutions. The new reference architectures provide server and storage guidance for various data warehouse workloads—giving you the most efficient hardware for your solution, saving you time and cost in choosing the right technology for your business needs.

KEY FEATURES

• Hardware components tuned for data warehouse solutions and sized for your identified workload

• Scale from 6 up to 48 terabytes using compression capabilities in SQL Server 2008 Enterprise

• Enjoy a lower cost of ownership through better price performance, rapid deployment and industry-standard hardware

• Tested on proven HP ProLiant servers:

   o HP ProLiant DL385 G6

   o HP ProLiant DL585 G6

   o HP ProLiant DL785 G6

• Storage configurations available with affordable and scalable HP MSA2312fc G2 SAN technology.

• Balanced solution approach ensures that all components are equally utilized from the CPU cores to the physical drives

Scale up your data warehouse using HP technology configured with the new SQL Server Fast Track Data Warehouse offering. Reduce your data warehousing cost while improving out-of-the-box performance.

The HP reference configurations bring together the right mix of technology and software, integrating the powerful HP ProLiant server line, the robust HP storage array and the data warehouse capabilities of SQL Server 2008 Enterprise.

Optimized for Data Warehouse Workloads
Many hardware configurations are ineffective at responding to data warehouse queries because they are tuned for transactional systems. The Microsoft and HP Fast Track architectures gain greater throughput and scale by using the right approach:

• Targeting query workloads patterned for large sequential data sets rather than small random data transactions

• Optimizing rapid data reads and query aggregations

Balanced Solution Approach
The Microsoft and HP reference architectures begin by taking your query response time requirements and calculating the number of CPU

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cores necessary to achieve that throughput. The I/O channel and storage arrays are matched to maximize the CPU throughput, taking advantage of all the hardware components in equilibrium, without under-utilizing or over-burdening any one component.

Core Consumption Rate and Estimated CPU Requirements

The Fast Track Data Warehouse configurations on the HP platform are driven by the CPU core consumption rate, which is the data throughput that a single CPU core can handle based on the query load. HP ProLiant servers with the latest-generation AMD Opteron 6-core processors have a CPU core consumption rate of approximately 200 MB/s throughput based on data warehouse workloads. This allows competitive query response times on lower-cost commodity servers, a fraction of the cost of big iron servers.

Once the consumption rate is calculated, the number of cores can be estimated by factoring the concurrent query data volume divided by the total consumption rate divided by the target response time in seconds.

Storage Configuration

The HP MSA2312fc G2 storage allows dual reads when drives are mirrored. For sequential data reads from data warehouse queries, this capability enables tremendous throughput per storage volume—up to 240 MB/s. For example, with only 12 pairs of drives, the storage array can achieve almost 2 GB/s when the solution is optimized for data warehouse workloads. When a storage array is optimized for transactional activity, but the system supports data warehouse workloads, you would need up to 2-3 times the number of drives to achieve the same throughput.

The HP ProLiant servers are configured with HP storage arrays, multiple Fibre Channel controllers and a Fibre Channel switch to load balance the connections to the storage processors in the following storage system.

- HP MSA22312fc G2
  - o 300 GB SAS 15K RPM
  - o 24 to 96 drives dedicated to user data
  - o 6 TB to 24 TB optimized
  - o Up to 48 TB of storage

Powered by HP ProLiant Servers

The reference configurations are built on three HP ProLiant server platforms, each targeting a different tier of a SQL Server data warehouse solution:

- HP ProLiant DL385 G6
  - o (2) AMD Opteron CPUs, 6 core, 2.6 GHz
  - o 12 total CPU cores
  - o 6 TB optimized storage (12 TB max)
  - o 2400 MB/s throughput

The HP ProLiant DL385 is ideal for data marts with a smaller departmental footprint of query activity with a volume optimized at 6 TB of compressed data.

- HP ProLiant DL585 G6
  - o (4) AMD Opteron CPUs, 6 core, 2.6 GHz
  - o 24 total CPU cores
  - o 12 TB optimized storage (24 TB max)
  - o 4800 MB/s throughput

The HP DL585 G6 serves the middle tier of data warehouse activity, targeting moderately complex queries and concurrency and optimized at 12 TB of compressed storage.

- HP ProLiant DL785 G6
  - o (8) AMD Opteron CPUs, 6 core, 2.6 GHz
  - o 48 total CPU cores
  - o 24 TB optimized storage (48 TB max)
  - o 9600 MB/s throughput

The HP DL785 G6, with eight 6-core processors, is the top scale-up model in the ProLiant server line, capable of handling higher concurrency and query complexity and optimized at 24 TB of compressed storage.

Additional Information

For more information about the SQL Server Fast Track Data Warehouse, visit http:/www.microsoft.com/fasttrack. or www.hp.com/solutions/microsoft/fasttrack.

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