No-Compromise Medium-Level Data Warehousing

A medium-level Microsoft SQL Server Fast Track Data Warehouse, which provides 50TB capacity for data volumes, supports enterprise-wide business intelligence for actionable decision-making. However, its relative data volume size in the tens of terabytes poses challenges for query performance, keeping the service available at all times, and scalability for additional data sources and data growth. Hitachi Unified Compute Platform (UCP) Select, a pre-configured data warehouse infrastructure for Microsoft SQL Server 2012, has been engineered to meet medium-level data warehousing requirements for top query performance, data availability and ease of scalability.

Hitachi UCP Select for Microsoft SQL Server 2012

To fully address the performance, scalability and data availability for Microsoft SQL Server 2012 Fast Track Data Warehouse for medium-sized data warehousing, Hitachi Data Systems offers Hitachi UCP Select for Microsoft SQL Server 2012. This fully integrated system is composed of servers, storage systems, network connectivity, and management software. It is purpose-built for Microsoft SQL Server Data Warehouse Fast Track for medium-level data warehousing.

Query Performance

Satisfying low-latency query performance, ad hoc and complex queries are paramount for end-user productivity for actionable decision-making in data warehousing. Hitachi UCP Select for Microsoft SQL Server 2012 is performance optimized to satisfy pressing demands for business intelligence and analytics. The solution balances Hitachi blade server query compute processing with the read-intensive data throughput capabilities of Hitachi Unified Storage 150.
Data Availability: Meeting Service Levels

Data warehousing and business intelligence are shifting from departmental solutions to enterprise-wide, centralized resources and from business-critical functions to mission-critical operations. Meeting data warehouse availability with reliable system uptime is now mandatory for full enterprise productivity, innovation and competitive advantage; downtime due to hardware failure must be avoided.

For full system availability, Hitachi UCP Select for Microsoft SQL Server 2012 helps to avoid unplanned downtime caused by hardware failure. With its system redundancy and robust architecture, the Hitachi solution for medium data warehousing can be deployed for mission-critical operations.

For added protection, Hitachi also supports an optional high-availability configuration: Additional failover servers are included as standby in case primary servers fail or become offline.

Scalability

The volume, variety and velocity nature of today’s data warehouse is changing the dynamics of data volume capacity requirements. To accommodate volume, variety, and velocity beyond 50TB of data storage capacity to hundreds of terabytes, Hitachi UCP Select for Microsoft SQL Server easily scales by adding Hitachi storage and Hitachi blade servers.

The Hitachi Advantage

Enterprise competitive advantage, innovation and operational efficiency stem from readily available data through analytics and business intelligence for actionable decision-making. Therefore, a data warehouse environment needs to be high performing, without data outages, and able to easily scale to accommodate growth in data capacity requirements.

Often, point solutions are able to address performance, but with the sacrifice of scalability and/or data availability. Hitachi UCP Select for Microsoft SQL Server 2012, because of its balance of Hitachi blade servers with Hitachi enterprise-class storage, is unique in its ability to address all aspects of data warehousing: high performance, data availability and scalability.

Hitachi UCP Select for Microsoft SQL Server 2012 is a continuation of the rich Hitachi history of delivering for mission-critical data center requirements, which dates back 50 years, starting with Hitachi mainframe computing.

Solution Elements

Hitachi Unified Compute Platform Select for Microsoft SQL Server 2012 is a complete medium-level Microsoft SQL Server database management system (DBMS) configuration (see Figure 1). The configuration includes: Hitachi server, Hitachi enterprise-class storage and networking. They work together in an optimized and balanced configuration of compute processing capability and storage performance for the specific workload requirements of a medium-level Microsoft Fast Track Data Warehouse (see Table 1).

Figure 1. Hitachi UCP Select for Microsoft SQL Server 2012: Medium-Level Configuration With Optional High-Availability Server

Compute Infrastructure: Hitachi Compute Blade 2000
  - X57A2 high-performance Intel server blade.
  - 2 Intel Xeon E7-8870 processors per blade.
  - 10 cores @ 2.4 GHz, 30MB processor cache memory.
  - 4-processor Hitachi symmetric multiprocessing (SMP).
  - 256GB with 8GB DIMMs.
  - Two 1GbE Ethernet ports.
  - 1 Hitachi Compute Rack 210H: 2U rack-mountable server to host the management environment.

Storage Infrastructure: Hitachi Unified Storage 150
  - Dual controllers for active-active link redundancy.
  - 32GB total system cache.
  - 32TB initial usable disk capacity.

Hitachi Unified Storage 150, rated at 99.999% uptime for data availability, features a symmetric active-active controller with dynamic load
balancing. Thus, it meets both uptime requirements and sequential read performance for Microsoft SQL Server 2012 Fast Track Data Warehouse.

**Fibre Channel Switch Infrastructure:**
Brocade 6510 Fibre Channel Switch
- Dual controllers for active-active link redundancy.
- 32GB cache.
- 4 x 4-port Fibre Channel modules.
- 5 Hitachi DBS disk boxes.
- (115) 600GB 10k RPM SAS drives for storage unit #1.
- (108) 600GB 10k RPM SAS drives for storage unit #2.

**Hitachi Compute Blade 2000**
Hitachi Compute Blade 2000 combines the traditional benefits of blade technology with the high-end features demanded by managers of today’s mission-critical data centers and cloud applications, especially for consolidation at the application and data tiers. Its flexible I/O and LPAR virtualization lets you tailor configurations to your applications, with the ability to dynamically adapt to changing workload demands.

**Hitachi Unified Storage 150**
Hitachi Unified Storage 150 supports data availability and features a symmetric active-active controller with dynamic load balancing. Features include native multipathing and load balancing to spread I/O workloads across resources, which make setup faster, reducing administrator and software costs, and optimizing performance.

With built-in automation that optimizes performance, end users can be assured that they will get the most out of their investment. Intuitive and easy-to-use software that comes with system has been designed to simplify even the most complex environments.

Meeting service level objectives for critical business applications has never been easier with a solution that provides the highest level of performance, data availability and data protection.

**Hitachi Command Suite**
Hitachi Command Suite features a unified architecture that integrates the products from the bottom up. Instead of separate products linked together, the software products in Hitachi Command Suite use a common code base. They use the same graphical user interface and share a common look and feel. Configuration and storage tier information is combined and synchronized in a database accessed by multiple products, rather than separate databases requiring larger data repositories that could be subject to inconsistencies. The new design improves the efficiency and reliability of storage management information, and provides a consistent and more flexible user experience.

**Next Steps**
For more information regarding Hitachi Unified Compute Platform Select for Microsoft SQL Server, please consult the following publications:


Visit www.HDS.com or contact your Hitachi Data Systems representative to learn more about how Hitachi UCP Select for Microsoft SQL Server 2012 can improve your Microsoft Fast Track Data Warehouse environment.

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**TABLE 1. HITACHI UCP SELECT FOR MICROSOFT® SQL SERVER® 2012**

<table>
<thead>
<tr>
<th>Server model</th>
<th>Hitachi Compute Blade 2000 with Intel X57</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage system</td>
<td>Hitachi Unified Storage 150</td>
</tr>
<tr>
<td>Fibre Channel SAN networking</td>
<td>■ Brocade 6510 Fibre Channel Switch</td>
</tr>
<tr>
<td></td>
<td>■ Redundant paths based on Emulex LightPulse 16002 Fibre Channel host bus adapters</td>
</tr>
<tr>
<td>Ethernet</td>
<td>2 built-in 10/100/1000Mbit/sec network interfaces</td>
</tr>
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<td>Database management system (DBMS) version</td>
<td>Microsoft® SQL Server® 2012</td>
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<td>Microsoft SQL Server 2013 Fast Track Data Warehouse program compliance</td>
<td>Yes</td>
</tr>
<tr>
<td>Hitachi management software</td>
<td>Hitachi Command Suite</td>
</tr>
</tbody>
</table>

Note: Software is sold and licensed separately. HDS does not resell Microsoft SQL Server software. Hitachi Data Systems ships this solution from its distribution center ready for the installation of Microsoft software.