

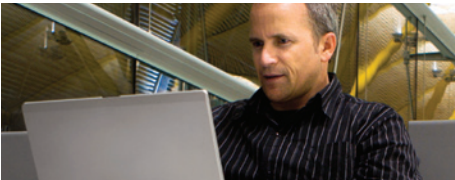


Driving Business Value from Hitachi Storage Solutions
Built upon Microsoft® Windows Server® 2008

Microsoft
GOLD CERTIFIED
Partner

Robust Infrastructure Solutions from Hitachi Data Systems and Microsoft

Hitachi Data Systems partners closely with Microsoft to provide robust infrastructure solutions for the Windows environment. A strategic participant and a platinum launch sponsor for the global launch of Microsoft Windows Server 2008, Hitachi Data Systems is working with Microsoft around the world, partnering with Microsoft



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*Tony Asaro
Senior Analyst
Enterprise Strategy Group*

on the announcement of its most innovative platform and announcing the readiness of Hitachi storage solutions for this platform.

As a Microsoft Gold Certified Partner, Hitachi Data Systems works closely with Microsoft to maintain and develop industry leading, innovative solutions by coupling the best-in-class technologies and offerings of each company to solve business and technical problems of organizations. Hitachi Data Systems maintains significant investments in core Microsoft partner areas, highlighted through its presence at the Microsoft Partner Solution Center (MPSC),

the Engineering Excellence Center (EEC) and various other product groups, testing facilities and support labs in Redmond, Washington, and other key locations.

Microsoft Windows Server 2008 is the most advanced Windows Server operating system to date, designed to power the next generation of Windows-based solutions. Windows Server 2008 builds on the strengths of its preceding versions, while delivering valuable new functionality and powerful improvements across the entire Windows Server family. With Windows Server 2008 administrators can develop, deliver and manage rich user experiences and applications, provide a secure network infrastructure and increase technological efficiency and value within their organizations.

Windows-based Storage Solution Keystones

Microsoft Windows Server 2008 provides a solid operating platform for many server workload and application requirements. In addition to its ease of deployment and management, its new web tools, virtualization technologies, security enhancements and management utilities help save time, reduce costs and provide a solid foundation for the information technology infrastructure. The same can be said for the feature rich, innovative and user friendly software and hardware portfolio offerings of Hitachi Data Systems. The following foundational building blocks are paramount to crafting and unlocking value throughout an organization through the Windows-based storage solutions.

Certification, Qualification and Validation

Hitachi Data Systems ensures that its various platforms, components, configurations and architectures conform to established Microsoft standards through active and ongoing participation, partnership and collaboration in key programs and events, such as Windows Logo program, Windows Plugfest events and the High Availability program.

HITACHI STORAGE SOLUTIONS BASED ON MICROSOFT WINDOWS SERVER 2008

Hitachi Data Systems is an industry leading and award winning storage solutions company that is driven to address the business and technical problems, requirements and needs of its customers. Together, Hitachi TrueNorth Channel Partners and Hitachi Data Systems deliver innovative and industry leading technology, mindshare and knowledge in the critical areas that are driving the top storage industry trends, and which influence the direction and requirements for Windows-based storage solutions. The following list highlights the technologies, intangibles and relationships that Hitachi Data Systems will use to differentiate itself in developing and delivering the next generation of Windows-based storage solutions for Microsoft Windows Server 2008.

VIRTUALIZATION

Hitachi, the pioneer in the external storage virtualization of both homogeneous and heterogeneous storage resources and infrastructures, has successfully transformed its market accepted and established storage virtualization technologies, methodologies and benefits into the unparalleled, internal architecture of the Hitachi Universal Storage Platform® V and Universal Storage Platform VM. Hitachi Dynamic Provisioning software unlocks the unmatched “thin provisioning” power and capabilities of these platforms by enabling numerous wide striping, virtual storage pool configurations and architectures that can be tailored to meet an organization’s technical and business requirements.

“TRUE” TIERED STORAGE

Unlike other storage offerings and solutions that loosely characterize different disk classifications and types as a tiered storage approach, Hitachi Data Systems has led and continues to drive the storage virtualization charge through the built-in intelligence of its networked

storage controllers. Without introducing additional network, data or appliance peripherals, Hitachi Tiered Storage Manager software provides native external virtualization capabilities of the Universal Storage Platform family, eliminating the introduction of additional components that add unnecessary costs and complexities.

ECO-FRIENDLY SOLUTIONS AND INITIATIVES

Power, cooling and real estate pressures and constraints are just some of today’s realities of doing business. Whether an organization is a rapid growth startup, a business expanding into the mainstream or a mature enterprise, Hitachi Data Systems can help mitigate these realistic business challenges and trends through various “green” technologies, initiatives and solution offerings. This “green” approach is an example of how Hitachi Data Systems has achieved industry pioneer status in providing technologies that address real and pressing business needs.

PARTNERS

Hitachi Data Systems and its TrueNorth Channel Partners are dedicated to developing and delivering storage solutions that address the needs and desires of organizations in the Microsoft Windows Server 2008 environment. Businesses benefit from the fact that several of Microsoft’s most prestigious partners add the same value and qualities through established partnerships and alliances with Hitachi Data Systems.

STORAGE SOLUTIONS FOR EVERYONE

Whether you are a small business or a large enterprise, Hitachi Data Systems provides a wide range of storage and management software tools to help you “right size” your storage environment now and in the future.

- **Windows Logo Program** — The Windows Logo Program enhances user confidence in the Windows experience through active partner engagement in logo strategy, process, certification and online services.
- **Windows Partner and Industry Events** — Hitachi Data Systems is an active participant in a large number of partner and industry events that revolve or are closely associated with the Microsoft Windows platform as

well as various Microsoft applications, including routine Plugfests, Backup BAM, Technical Design Review (TRD), Technical Adoption Program (TAP) and product group briefings. In addition, Hitachi Data Systems is a regular sponsor and participant of the leading industry benchmark events for Microsoft, including TechNet, WinHEC and Storage Networking World (SNW).

- **High Availability Program** — The Windows High Availability Program addresses the demanding requirements

of enterprise level organizations by providing an integrated hardware, software and service offering. Designed to support the high availability levels required for mission critical solutions, the program integrates Windows Server 2008 operation with OEM partnerships and service offerings. Organizations receive qualified and validated data center configurations and certified support from Microsoft and partners.

Interoperability and Integration

Key Hitachi Data Systems offerings provide tight integration of all of its hardware platforms and core software offerings with the storage related features and interfaces of Microsoft Windows Server 2008 to reduce cost and complexity, while increasing availability and business agility. Hitachi Data Systems solution components possess high levels of interoperability through tight integration with the key storage interfaces embedded within Windows Server 2008, which include Virtual Disk Service (VDS), Volume Shadow Copy Service (VSS) and Multi-path I/O (MPIO).

by Hitachi, in accordance with the VSS framework, to integrate its industry leading, robust software suite of replication technologies, including:

- **Hitachi Copy-on-Write Snapshot software** (in-system replication)
- **Hitachi ShadowImage® Heterogeneous Replication and ShadowImage Replication software** (in-system replication)
- **Hitachi TrueCopy® Synchronous, TrueCopy Asynchronous/TrueCopy Extended Distance software** (remote replication)



Hitachi hardware and software easily integrates with interfaces of Microsoft Windows Server 2008 to reduce cost and complexity, while increasing availability and business agility.

- **Hitachi Device Manager software** provides extended allocation, provisioning and management capabilities for NTFS-based logical units (LUNs) that are compliant with the native VDS framework.
- **Hitachi Protection Manager software** complies with and leverages the VSS framework in the context of a VSS requestor to facilitate and manage split mirror backups of multiple Microsoft applications. Protection Manager utilizes the VSS requestors developed
- Hitachi Universal Replicator software (asynchronous remote replication)
- **MPIO — Hitachi Dynamic Link Manager software** extends the native capabilities of the native, in box DSM for Microsoft Windows Server 2008 through a variety of settings that allow the administrator to apply the optimal I/O path management configurations and algorithms.
- **Hitachi Global Link Manager software** provides centralized management capabilities for all hosts running the software, which reduces complexity and management costs.

What Hitachi Data Systems Brings to the Table

Working closely with Microsoft, Hitachi Data Systems has developed scalable, reliable, available, high performance Microsoft Windows Server 2008-based storage solutions for Microsoft Windows Server 2007.

Scalability

The explosive growth of messaging data and the increased adoption and use of Microsoft Exchange Server 2007 to help consolidate and manage it requires a storage partner as fast and flexible as business. *"The USP V [Hitachi Universal Storage Platform® V] is a vision that Hitachi Data Systems is executing on: A HIGHLY VIRTUALIZED STORAGE SYSTEM that enables end users*

to provide best-in-class storage services to the business," asserts Tony Asaro, senior analyst, Enterprise Strategy Group (ESG). ESG derived the following metrics from an independent test and evaluation of Microsoft Exchange Server 2007 deployed on the Universal Storage Platform V with virtual volumes managed by Hitachi Dynamic Provisioning software:

- 64 percent more Microsoft Exchange database transactions
- 38 percent more Microsoft Exchange users
- 716 percent performance boost for I/O workloads

Hitachi storage is not only for large and enterprise Microsoft Exchange Server 2007

environments. With the modular, midrange Hitachi Adaptable Modular Storage systems, business and technical requirements of medium sized companies are also met. The most scalable, high performance, high availability systems in their category, Adaptable Modular Storage systems are ideal for medium sized companies and small enterprises that need an upgradable storage path to keep pace with messaging needs.

Reliability

Reliability is critical to businesses and enterprises of all sizes and is something Microsoft is committed to with Windows Server 2008 and Microsoft Exchange Server 2007. With a strong heritage in protecting, maintaining and supporting mission critical, enterprise environments, Hitachi Data Systems is entrusted with the data of over



half the top 100 companies listed on the Fortune 500®. That's why you should not trust the applications critical to your business to anyone but Hitachi Data Systems.

Availability

With Windows Server 2008 and SQL Server 2008 now more robust and available than ever before, and with technologies like the Hitachi Universal Storage Platform V, Hitachi Universal Replicator software, Hitachi TrueCopy Synchronous software and Hitachi Storage Cluster for Microsoft Environments, organizations can now have a storage platform that can keep data safe without sacrificing performance or reliability. A unique replication method of sequence numbers and time stamps in each data record ensures proper sequencing and data integrity to

eliminate the possibility of corruption while protecting the most valuable data from site and regional disasters.

Performance

At a blistering four million input output operations per second (IOPS) of maximum performance, and fueled by its next generation, large scale heterogeneous virtualization layer and Hitachi architectural innovations, the Universal Storage Platform V will accelerate SQL applications' performance past that of the competition.

"The USP V takes performance to another level," says Tony Asaro, senior analyst, Enterprise Strategy Group. "This is also innovation at its best — improving the architecture of a storage system to raise its



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Deployment and Maintenance

Hitachi Data Systems reduces the risk, learning curve and maintenance requirements associated with implementing and maintaining Windows-based storage solutions through a rich set of mindshare collateral, knowledgeable field resources and an award winning global support organization. Nondisruptive microcode

upgrades, hot-swappable components and proactive, “phone home” capabilities prevent service disruptions that result from normal maintenance activities.

Management and Protection

Hitachi Data Systems provides a large number of products and solutions that address the initial and ongoing storage infrastructure management for Microsoft Exchange Server 2007 deployments. Hitachi Device Manager software provides centralized management of storage resource allocation and utilization through a series of intuitive features and a common interface. Performance monitoring is a vital task for the Microsoft Exchange administrator to ensure that deployed configurations and architectures are delivering at expected and acceptable levels. Hitachi Tuning Manager software provides a proactive method of analyzing and evaluating the entire data path, from host to physical spindle, which allows the administrator an easy method to identify and troubleshoot potential performance issues.

Today's business can require the protection and ability to rapidly resume operations from a plethora of disaster scenarios, ranging from an isolated data center incident to a more calamitous event. Hitachi Storage Cluster, Microsoft Windows Server 2008 failover clustering and Hitachi replication technologies combine to deliver near zero recovery point objectives (RPO) and extremely low recovery time objectives (RTO) for mission critical applications such as Microsoft Exchange Server 2007.

Organizations with aggressive Exchange availability and service level agreements often cannot meet them with traditional or software-based VSS backups. Hitachi Protection Manager software facilitates, requests and manages VSS and VDI compliant backups and rapid recovery of these same key Microsoft business applications using Hitachi in-system replication technologies and providing

additional levels of recoverability. They also mitigate issues stemming from the ever shrinking backup windows that Microsoft Exchange Server 2007 administrators may face. For organizations looking for single mailbox or single message or item recovery, inexpensive third party offerings that integrate with Protection Manager and its hardware-based VSS backups to facilitate such a scenario are available.

Native Exchange Replication

Local Continuous Replication (LCR), Cluster Continuous Replication (CCR), and, with Service Pack 1 for Microsoft Exchange Server 2007, Standby Continuous Replication (SCR) provide administrators and organizations effective alternatives in extending the availability of messaging infrastructures. Hitachi Data Systems solutions such as Protection Manager and Storage Cluster complement the native Microsoft Exchange Server 2007

replication solutions by delivering the highest levels of availability and business continuity found in the industry.

Organizations looking at deploying one of the first generation, built-in replication technologies of Microsoft Exchange Server 2007 to enhance availability and considering direct attached storage (DAS), may wish to reconsider. Although DAS is a potential storage infrastructure alternative for Microsoft Exchange Server 2007, the current DAS technologies pale in comparison to the numerous technical and business benefits that a storage area network (SAN) can provide in key areas, such as availability, reliability, scalability, capacity and manageability.

Questions?

For more information regarding Hitachi Data Systems solutions for Microsoft platforms, please visit www.hds.com.



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