Microsoft and CommVault Systems have long enjoyed a close relationship over the years. During the past year, Microsoft and CommVault have collaborated to create a great application experience on Windows Server™ 2003. Not only are CommVault’s flagship applications ready to run on and support Windows Server 2003 but also provide customers great assurance by meeting the rigorous standards of Microsoft’s “Certified for Windows®” program.

Microsoft’s “Certified for Windows” program is designed to provide high levels of availability, reliability, security, and supportability on Windows Server platforms. In order to meet these high standards, Microsoft and participating ISVs work closely in ensuring that key applications meet the certification criteria. The final validation is delivered through VeriTest, a third-party independent testing company who does the actual testing based on Microsoft’s specifications. Customers will soon find CommVault Systems on the certified application list.

Microsoft and CommVault invite you to discover how we can create better business environment and solutions through CommVault’s QiNetix, Galaxy and Data Migrator running on Windows Server 2003.

Larry Cormier  
Vice President of Marketing and Business Development  
CommVault Systems, Inc.

Bill Veghte  
Corporate Vice President  
Windows Server Group  
Microsoft Corporation
Microsoft Server Products Provide Reliable, Scalable Platforms for Mission-Critical Applications

Windows Server 2003 is designed to help customers do more with less. It builds on the strengths of the Windows 2000 Server Family to take application and hardware performance to new heights.

With Windows Server 2003 you receive:
- The most secure Windows Server release yet
- Scalability extending to 64 processors
- Overall enhancements in reliability, availability, and manageability

With Windows Server 2003, customers receive a Windows server environment that supports up to 64 processors and 512 GB of RAM on IA64 platforms (the 64-bit technology is offered on Windows Server 2003 Enterprise and Datacenter Editions), and 32 processors and 64 GB of RAM on IA32 platforms. The Windows Server 2003 family is comprised of the following four SKUs: Web, Standard, Enterprise, and Datacenter Editions.

### Microsoft Windows Server 2003 Family

#### Windows Server 2003, Standard Edition
Windows Server 2003 Standard Edition is the reliable network operating system that delivers business solutions quickly and easily. This flexible server is the ideal choice for small businesses and departmental use.
- Supports file and printer sharing.
- Supports secure Internet connectivity.
- Allows centralized desktop application deployment.

#### Windows Server 2003, Enterprise Edition
Windows Server 2003 Enterprise Edition is built for the general-purpose needs of businesses of all sizes. It is the platform of choice for applications, Web services, and infrastructure, delivering high reliability, performance, and superior business value.
- Is a full-function server operating system that supports up to 8 processors.
- Provides enterprise-class features such as 8-node clustering and support for up to 32 GB of memory.
- Is available for Intel Itanium-based computers.
- Will be available for 64-bit computing platforms capable of supporting 8 processors and 64 GB of RAM.

#### Windows Server 2003, Datacenter Edition
Windows Server 2003 Datacenter Edition is built for business-critical and mission-critical applications that demand the highest levels of scalability and availability.
- Is the most powerful and functional server operating system Microsoft has ever offered.
- Supports up to 32-way SMP and 64 GB of RAM.
- Provides both 8-node clustering and load balancing services as standard features.
- Is available for 64-bit computing platforms capable of supporting 64 processors and 512 GB of RAM.

#### Windows Server 2003, Web Edition
A new product within the Windows operating systems, Windows Server 2003 Web Edition is provided for both Web serving and hosting.
- Is provided for building and hosting Web applications, Web pages, and XML Web Services.
- Is designed to be used primarily as an IIS 6.0 Web server.
- Provides a platform for rapidly developing and deploying XML Web services and applications that use ASP.NET technology, a key part of the .NET Framework.
- Is easy to deploy and manage.
Security
Microsoft has invested heavily in the Secure Windows Initiative with the goal of delivering systems that are secure by design, default, and deployment. In addition, Windows Server 2003 is the first Windows operating system to ship under the Trustworthy Computing initiative (launched by Bill Gates in January 2002) which is based on four pillars: security, privacy, reliability, and business integrity.

Secure by Design
The improved security of Windows Server 2003 reflects Microsoft’s $200 million investment in 2003 to reduce code vulnerabilities in its platform, modify the development process, and improve accountability at every level for security. Focusing on security improvements, Windows Server 2003 includes a redesigned IIS, strong authentication protocols such as 802.1x and PEAP, and common language runtime (CLR) to create a safer computing environment.

Secure by Default
To secure Windows Server 2003 by default, the attack surface area was reduced by creating stronger default policies (e.g., file system Access Control Lists); redesigning IIS; and reducing the total number of services, reducing the number of services running by default, and reducing the number of services running as System.

Secure in Deployment
In addition to the more secure architecture design and added security features in Windows Server 2003, Microsoft offers its customers tools, prescriptive guidance, training, and services to help them deploy a secure, connected infrastructure.

Tools
- **Software Restriction Policy** (SRP) is a new feature in Windows Server 2003 and Windows XP that gives administrators a policy-driven mechanism to identify software running in their domain and control its ability to execute.
- **Security Configuration Editor** (SCE) is designed to help businesses secure Windows systems operating in various roles and deployment scenarios, such as a Web server that is connected both to the Internet and to a secure internal network. The goal of SCE is to help customers maximize the security of such systems without sacrificing functionality.
- **Microsoft Audit Collection Services** (MACS) is a tool used to monitor and audit systems. MACS collects security events in a compressed, signed, encrypted manner and loads them into a SQL database for analysis.

Internet Information Services (IIS) 6.0
One of the key highlights of the security enhancements in Windows Server 2003 is the complete redesign of IIS 6.0. This powerful Web service is available in all versions of Windows Server 2003. It helps to provide a highly reliable, manageable, scalable, and secure Web application infrastructure. IIS 6.0 makes it possible for organizations of all sizes to quickly and easily deploy powerful Web sites and applications, and IIS 6.0 provides a high-performance platform for all applications.

Because of the integration of the .NET framework into the IIS 6.0 process model, applications built with the Microsoft .NET framework are faster and more reliable. The benefits of choosing IIS 6.0 include:
- less planned and unplanned system downtime
- increased Web site and application availability
- lower system administration costs
- server consolidation (reduced staffing, hardware, and site management costs)
- a significant increase in Web infrastructure security

Scalability
Windows Server 2003 takes the scalability gains found in the Windows 2000 Server Family to new heights. It is designed for both scale-up and scale-out scenarios—with scale-up scenarios enabled by symmetric multiprocessing (SMP) and Cache Coherent Non-Uniform Memory Access (CC-NUMA) optimizations, and scale-out by the various types of clustering provided by Microsoft.

Internal tests indicate that, compared to Windows 2000 Server, Windows Server 2003 delivers up to 140 percent better performance in the file system as well as significantly better performance in various other features, including Microsoft Active Directory service, Web server, Terminal Server components, and networking services.

Key scalability enhancements include:
- **64-Bit Support.** Support for 64-bit architecture with Enterprise and Datacenter Editions and 512 GB of RAM.
- **Support for Intel Hyper-Threading.** Allows a single physical processor to execute multiple threads (instruction streams) simultaneously, potentially providing greater throughput and improved performance.
- **NUMA Optimization.** Most Windows applications will perform optimally without modification on NUMA systems running Windows Server 2003 because of automated NUMA features in the operating system (offered only on Enterprise and Datacenter Editions).
- **Hot Add Memory.** Allows ranges of memory to be added to a computer that supports this feature. This was made available to the operating system and applications as part of the normal memory pool without requiring downtime or rebooting the computer (offered only on 32-bit versions of Enterprise and Datacenter Editions).

Reliability, Availability
Reliability and availability are woven into every aspect of Windows Server 2003 design to provide for a better customer experience. Key highlights include:
- **8-Node Clustering.** Increasing the number of nodes in a server cluster gives administrators more options for deploying applications and providing failover policies that match business expectations and risks. (8-node clustering is supported on the 32-bit and 64-bit Enterprise and Datacenter Editions.)
- **Network Load Balancing Manager.** This new utility in Windows Server 2003 provides a single point of configuration and management for NLB clusters.
- **Datacenter High Availability Program.** The Datacenter Program has been expanded to meet the growing customer demand for higher availability on Windows.
Manageability

Windows Server 2003 delivers enhanced management capabilities designed to simplify and automate the management of Windows environments, while providing the flexibility and reliability to meet customers’ business needs.

Key highlights include:

- **Automated Deployment.** New and enhanced capabilities to automate the deployment and redeployment of the operating systems and applications.
- **Policy Based Management.** Provides fine-grained control over the definition and enforcement of IT policies.
- **Effective User Service Management.** IntelliMirror® gives users consistent access to their applications, roaming user profiles, and user data, from any managed computer (even when they are disconnected from the network). IntelliMirror also gives centralized backup of user data and configuration files department.
- **Enhanced Security Management.** Powerful tools to establish and manage the security of their Windows environments.
- **Scalable Operations Management.** Remote administration is enabled via Terminal Server, Windows Script Host, and Windows Management Instrumentation (WMI), the management infrastructure that provides access to more than 10,000 system objects in Windows Server 2003 via application, scripting, and command line interfaces.
- **Windows System Resource Manager (WSRM).** WSRM enhances application availability and quality of service by providing control over application CPU and memory utilization, making it easier to run mixed application workloads on a single server.
- **Active Directory Enhancements.** Increased flexibility and manageability enhancements, such as secure credential and certificate management, provide a consistent single sign-on experience and health monitoring visibility to easily monitor trusts and replication activity.

Virtual Server

Virtual Server (acquired from Connectix) addresses customer needs for application migration and server consolidation. Virtual Server enables customers to run multiple operating systems and applications in Virtual Machine (VM) environments (a VM is essentially a computer-implemented in software-running in isolated software partitions on a physical computer).

The benefits of VM technology for application migration and server consolidation include:

- **Simplicity:** Virtual Server supports every major x86 Microsoft provided operating system running in the VM environment, leveraging industry-standard device drivers. This capability enables customers to run their Windows NT4 applications (for example), without change or disruption in usage or management, on more powerful and more resilient hardware that takes advantage of the performance and reliability enhancements of Windows Server 2003.
- **Automation:** Virtual Server is fully extensible through a COM API that enables scripted or programmatic control over the configuration, operation, management, and integration of VM environments.
- **Flexibility:** Virtual Server can be configured on desktop systems and deployed on high-end Intel-based servers. Virtual Hard Drives (VHDs) are highly portable and system integrators can integrate and enrich XML configuration files for fast, economic deployment.
- **Security:** Virtual Server provides separate security contexts for each Virtual Server, allowing internal and external hosting environments to provide complete control of the VM to ‘owners’, without compromising the security of other VMs, or the system overall.

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### Windows Server 2003 Features

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</thead>
<tbody>
<tr>
<td>32-bit Max Processors</td>
<td>32</td>
<td>8</td>
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<td>File Sharing Connections</td>
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<td>Unlimited</td>
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<td>Print Server</td>
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<td>Yes</td>
<td>Yes</td>
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</tr>
<tr>
<td>Active Directory</td>
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<tr>
<td></td>
<td>or Member Server</td>
<td>or Member Server</td>
<td>or Member Server</td>
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</tr>
<tr>
<td>Terminal Services</td>
<td>App and Admin Mode</td>
<td>App and Admin Mode</td>
<td>App and Admin Mode</td>
<td>Admin Mode Only</td>
</tr>
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<td>Terminal Services Session Directory</td>
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<td>UDDI</td>
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<td>Yes</td>
<td>Local DB Only</td>
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<td>Fail-over Clustering</td>
<td>8-Node</td>
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<td>Windows Media Server</td>
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<td>VPN Connections</td>
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<td>Certificate Server</td>
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<td>Yes</td>
<td>Windows 2000 Level</td>
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<td>Windows System Resource Manager</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Datacenter High Availability Program</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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</tr>
</tbody>
</table>
The CommVault® Galaxy™ Backup and Recovery solution presents a logical rather than a physical view of enterprise storage. That means you can recover data without knowing where it is stored. This solution offers a flexible and intuitive user interface as well as a powerful set of storage management capabilities. Its logical presentation of information provides granular access to stored data. The CommVault architecture applies directly to the new high availability data environment of the emerging SAN market by offering a unified view of enterprise storage resources as well as LAN-free and Server-less backup.

With the Galaxy solution, you can easily protect local or remote SPS Dashboard, databases, indexes, and documents. Even the Portal can be included in daily backup routines allowing for continuous protection. CommVault Galaxy is a “best-of-breed” data and storage management solution engineered for adaptive deployment, superior performance, and painless automation.

**Company description**

CommVault Systems, Inc. provides unified enterprise data management solutions to ensure high-performance data protection, universal availability, and simplified management of complex storage networks. The company’s focus is to deliver simple, fast and scalable products that fit seamlessly into SAN, NAS or LAN-based infrastructures. The CommVault® QiNetix™ platform, based on CommVault’s Common Technology Engine, integrates Galaxy backup and recovery, data migration, data high availability, storage resource, and SAN management software solutions. Customers can deploy individual products or seamlessly integrate new elements into an existing CommVault solution at a fraction of the time, effort and money required by separate point products.

CommVault’s Windows-centric data management solution allows you the easiest and fastest way to backup, restore, archive, migrate, and consolidate your DataCenters. The product has gained certification in the Microsoft “Certified for Windows” for Windows 2000 Server, Advanced, and Datacenter Servers, and is also part of the Microsoft System Architecture (MSA) program, which creates complete enterprise data center architectures. Galaxy offers a Windows-centric method of managing heterogeneous system resources, with advanced support for Microsoft applications such as Exchange, SQL, SharePoint, Active Directory, Great Plains, and Windows .NET.

**The Bottom Line**

CommVault Systems provides unified enterprise data management solutions that ensure high-performance data protection, universal availability, and simplified management of complex storage networks.
CommVault Systems, Inc., has had a long and close relationship with Microsoft, including recognition as a Microsoft Gold Certified Partner for the Windows Server 2003 launch and participation in the Microsoft System Architecture (MSA) program, which creates complete enterprise data center architectures. As a result, CommVault has been able to use detailed information from Microsoft to ensure that Galaxy’s design exploits the robust new features in Windows Server 2003.

For example, a new feature of Windows Server 2003, Volume Shadow Copy Service (VSS), maintains disk copies of file changes and creates automatic backups of complete files at specified intervals. CommVault Galaxy for Exchange, SQL, and Windows Servers is fully integrated with VSS.

Thorough knowledge of Windows Server 2003 gives Galaxy the ability to restore data at the finest granularity in the industry, including:
- objects and attributes within Active Directory
- documents within SharePoint
- messages within Exchange

Galaxy accelerates upgrades and scale-ups by allowing you to take backups from Windows NT 4, Windows 2000, Windows XP, as well as non-Windows operating systems. You can then restore that data to your new Windows Server 2003 machine. With Galaxy, you can also take Exchange 5.5 messages and mailboxes and restore them to both Exchange 2000 and Exchange Server 2003 (code named Titanium).

The Galaxy iDataAgent for Microsoft SQL Server offers high performance online backup and recovery of Microsoft SQL databases. Galaxy uses the Microsoft Developer’s Network virtual device interface to provide parallel backup data streams (called “striping”) to deliver maximum throughput.
Galaxy Smooths Oil Co Migration
A hypothetical petroleum and chemical enterprise handles all its internal messaging and collaboration through Microsoft Exchange. It is currently trying to upgrade its more than 1500 Windows NT servers worldwide to Windows Server 2003. As part of this massive infrastructure upgrade, the company is deploying a number of storage attached networks (SANs) and must also replace its backup and data recovery systems. The new backup systems must work throughout the transition with equal infallibility on both Windows NT 4.0 and Windows Server 2003 to guarantee no loss of the terabytes of vital Exchange data.

The company first turned to CommVault Systems because of its close relationship with Microsoft and Galaxy’s reputation for painlessly automating the entire backup and recovery process. They were sold when they learned that Galaxy could automate portions of the actual data migration.

The IT department, at first dreading the amount of work involved, was pleased with Galaxy’s intuitive interface and ease of use. As they mastered the product’s features, they found the migration moving faster and with fewer problems than they’d anticipated. And once the migration was complete, they found they were spending only a fraction of the time on backup and recovery that their former system required. As a result they were able to take advantage of the scalability of both Galaxy and Windows Server 2003 to begin expanding the capacity of the network.

Galaxy Cures Biotech Virus Outbreak
Genetic testing brings a whole new meaning to the term “data-intensive.” This hypothetical company keeps track of hundreds of thousands of staggeringly complicated gene sequences for purposes ranging from paternity tests to transplant matching to criminal cases. The data is as sensitive as it is complex and lives frequently depend on its accuracy and timeliness.

Ironically, computer viruses can be even more deadly to a biotech company than their counterparts in the world of organic life. After a virtual epidemic of virus attacks, the company began searching for a solution that was fast enough to take advantage of its narrow early-morning window for backup, and would offer as simple a way to restore files as to archive them.

The search ended with CommVault’s Galaxy. Galaxy offered specific plug-ins for all the applications the company uses, first class service and support after the sale, and an intimate knowledge of Windows Server 2003 and SQL Server 2000. The IT department budgeted a week for the deployment, configuration, and ramp up of the new software and DAT jukebox hardware; to their surprise, they completed the work over a weekend, with time left to watch football on Sunday afternoon.

The system had been in place less than a month when another new virus got into the system from one of the company’s remote users. The company’s CIO described the subsequent data restoration process as “effortless.”
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Microsoft Links
Microsoft Windows Server 2003
www.microsoft.com/windowsserver2003/default.mspx

Security Services in Windows Server 2003

Internet Information Services 6.0
www.microsoft.com/windowsserver2003/evaluation/overview/technologies/iis.mspx

Active Directory Enhancements
www.microsoft.com/windowsserver2003/evaluation/overview/technologies/activedirectory.mspx

Windows System Resource Manager

Microsoft Virtual Server Technology
www.microsoft.com/windowsserver2003/techinfo/overview/virtualization.mspx

Windows Datacenter OEMs
www.microsoft.com/windowsserver2003/partners/oems/default.mspx

Windows Server 2003 Datacenter Certified ISVs
www.microsoft.com/windowsserver2003/partners/isvs/isvs.mspx

“Certified for Windows” Homepage
www.microsoft.com/windowsserver2003/partners/isvs/cfw.mspx

“Certified for Windows” Applications List
cert.veritest.com/CfWreports/server/
Microsoft’s Certified for Windows program is sponsored by industry-leading companies such as Intel and Unisys. Microsoft and VeriTest are working closely with these sponsors to provide a better testing environment for independent software vendors who participate in the Certified for Windows program.

The objective of this certification program is to provide customers the highest level of assurance when choosing applications running on Windows 2000 Server and Windows Server 2003. In order to have an application certified, an independent software vendor and Microsoft work together to ensure that the application meets the highest standards for reliability, availability, security and supportability. These standards apply to Microsoft and third-party applications.