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The Winning Combination: Compaq ProLiant Servers and Microsoft Windows 2000

Abstract: Compaq leads the way in the deployment of Microsoft Windows 2000 by offering innovative hardware, exceptional services, and Intelligent Manageability tools to simplify your installation and to manage your network.

This document provides information on the Compaq and Microsoft Frontline Partnership, the features Microsoft added to Windows 2000, and the Compaq ProLiant products, services, management tools, and resources that help you gain the most from your Windows 2000 deployment.

Help us improve our technical communication. Let us know what you think about the technical information in this document. Your feedback is valuable and will help us structure future communications. Please send your comments to: OSIntegrationFeedback@Compaq.com

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The Winning Combination: Compaq ProLiant Servers and Microsoft Windows 2000
Integration Note prepared by ISSG Technology Communications

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The Frontline Partnership

Leadership, teamwork, experience, and commitment characterize the relationship existing for almost two decades between Compaq and Microsoft. Customers gain many benefits from the Frontline Partnership, including a single point of responsibility, support for business-critical systems worldwide, comprehensive and integrated solutions, scalable and reliable infrastructure for implementing our leading-edge line of business solutions, and low-risk, cost-effective solutions. In recognition of these comprehensive IT offerings and capabilities, Compaq was named the Microsoft Global Services Partner of the Year. Compaq is the Worldwide Prime Integrator for the Microsoft Windows NT and Windows 2000 operating systems. Microsoft awarded this honor for Windows NT in 1998 and extended it to Windows 2000; Compaq holds this endorsement exclusively.

Compaq was the only hardware provider to participate in Microsoft's Joint Development Program (JDP) and Rapid Deployment Program. Under the terms of the JDP, we provided on-site service professionals in Microsoft labs and also provided exclusive and extensive support to customers participating in the program.

The development of a new operating system such as Windows 2000 requires an extraordinary relationship between the developer and hardware supplier. As a Joint Development Partner and Rapid Deployment Partner for Windows 2000, Compaq engineered and tested its hardware and support software on this revolutionary network operating system from its inception. Compaq ProLiant servers provided the primary development platform for Windows 2000. In fact, the majority of Windows 2000 code was developed on Compaq products and all deployment program events were run on Compaq equipment.

Some of the essential pieces of the Frontline Partnership include the following:

- **Joint Development**

Compaq and Microsoft jointly build innovative solutions that deliver record-breaking performance and value. Not only was the Microsoft Windows 2000 operating system designed, tested, and deployed on Compaq servers at Microsoft, but also Compaq engineers were closely involved in the day-to-day development and testing activity. Compaq has a dedicated team in Redmond solely responsible for testing future releases and ensuring future hardware reliability and compatibility. Other Frontline Partnership cooperative engineering efforts have resulted in numerous shared patents including Plug and Play, Advanced Configuration and Power Interface (ACPI), and Device Bay. For more information on performance, check <http://www.compaq.com/products/servers/benchmarks/index.html>.

- **Joint Marketing**

Customers receive special opportunities by participating in joint seminars, customer events, account briefings, communications, and messaging provided by Compaq and Microsoft teams. The Frontline Partnership marketing programs deliver value through communication of the latest advances in web-enabled information technologies that help businesses to compete effectively in the ever-changing world marketplace.

- **Joint Support**

By providing joint training, technical tools, information databases, and dedicated personnel, Compaq and Microsoft provide superior service for all your information and technology needs. Compaq Professional Services help plan, design, and implement computing infrastructures, while Compaq and Microsoft Customer Support Services help manage and maintain the existing computing resources effectively.

- **Joint Testing**

Compaq and Microsoft extensively test solutions to ensure performance and reliability and to instill confidence in your choice of a Compaq and Microsoft solution. An Enterprise Solution Center in Redmond, Washington has a dedicated team of experts with a wide range of expertise to help customers test and determine what enterprise solution works best for their business. This ongoing testing involves every Microsoft project from its earliest stages through service pack releases.

- **Joint Training**

Compaq and Microsoft provide their personnel with sales and technical training to insure the proper level of expertise in communicating the advantages of our joint solutions. We provide this training to groups ranging from corporate technical support teams to field sales and engineering as well as our resellers and solution providers.

Compaq operates Frontline Partnership Customer Solution Centers located in Bellevue, Washington; Valbonne, France; Kuala Lumpur, Malaysia; and Tokyo, Japan. These "proof-of-concept" facilities showcase Microsoft and Compaq solutions operating within complex, multi-vendor, and real world IT environments. Compaq is only one of two service providers worldwide authorized by Microsoft to support its enterprise customers. For additional information on Compaq and Microsoft Frontline Partnership, visit <http://www.compaq.com/partners/microsoft/index.html>.

Why Microsoft Windows 2000

Microsoft built Windows 2000 Server for the business Internet. The three versions—Windows 2000 Server, Windows 2000 Advanced Server, and Windows 2000 Datacenter Server—provide a comprehensive range of Internet technologies, reliability, availability, and support for the newest hardware. However, Compaq made sure that its older equipment works with Windows 2000 as well.

Internet Technology

Connection, efficiency, security, and expansion are critical to any company using the Internet to do business with either consumers or other businesses. With Windows 2000, you can:

- Connect employees, customers, and suppliers securely—anywhere in the world
- Build line-of-business applications to run your company more efficiently
- Share selected information without compromising confidentiality
- Expand your network environment as needed

Reliability

Microsoft changed the way the developers design, develop, and test Windows to increase the reliability of its operating system. The reliability improvements translate to fewer network interruptions because of more server uptime. Included among the improvements:

- New development tools
- Dedicated reliability teams

- System-wide stress tests simulating millions of users
- Windows 2000 Driver Verifier for independent software developers and hardware vendors
- Less restarting after hardware and software installation and reconfiguration
- Resource-partitioning to prevent application failures from forcing reboots
- More reliable and scalable clustering capabilities

Availability

Microsoft designed Windows 2000 for easy deployment, configuration, and use making this operating system both cost-effective and highly available. Most hardware and software installations do not require rebooting the server. Windows 2000 includes other new or enhanced features, such as:

- Wizards to assist with deployment and configuration
- Support for Plug and Play network adapters
- Simplified delegation features
- More consistent user interface
- Group policy component
- Windows Management Instrumentation (WMI)
- Windows Script Host (WSH)
- Microsoft Management Console (MMC)
- Resource partitioning feature
- Task Manager improvements
- Boot options enhanced to provide quicker restarts
- Two and four-node clustering capabilities to provide enhanced high availability for applications and protection against system failures

Hardware Support

Microsoft Windows 2000 allows you to take advantage of all the latest advances in hardware and communication products. While vendors like Compaq certified older equipment to operate Windows 2000 Server and Windows 2000 Advanced Server, this new operating system supports a wide range of the latest technology, including:

- Multi-processor hardware
- Plug and Play devices
- USB devices
- Network adapters
- QoS-enabled switches and routers
- Smartcards

- Wireless communication
- Infrared devices
- FireWire

Microsoft Windows 2000 Versions

Microsoft offers three versions of its Windows 2000 operating system for server environments, Windows 2000 Server, Windows 2000 Advanced Server, and Windows 2000 Datacenter Server.

Windows 2000 Server provides features, benefits, and functionality not available with Windows NT Server including Active Directory, an improved user interface, a more standards-based environment, faster performance, enhanced security, comprehensive support, and, most importantly, greater reliability.

Windows 2000 Advanced Server adds support for extremely high-performance servers and clustering. Advanced Server allows you to increase server performance and capacity by adding processors and memory, a process called scaling up, as well as by adding additional servers; a process called scaling out. Advanced Server supports a two-node cluster linking two servers together so, if one server goes down, the other picks up the workload. Advanced Server also supports network load balancing over 32 servers, redistributing the workload between remaining servers in case of a failure. Advanced Server introduced Physical Address Extension (PAE); PAE allows the operating system kernel to take full advantage of all available physical memory for existing applications.

Windows 2000 Datacenter goes even further to handle more processors and memory per server, to scale to a four-node cluster, to implement Winsock Direct, and to utilize Process Control. Winsock Direct increases the communication bandwidth between applications in a system area network (SAN). The Process Control tool manages the allocation of server resources using objects to organize, control, and manage the processes on your network along with the resources they use.

Windows 2000 Datacenter Server is only available from qualified OEMs. The Compaq Data Center program offers customers an industry-standard solution with the highest levels of performance, reliability, and stability demanded in a business critical environment.

The Compaq ProLiant Data Center Solution includes the ProLiant DL760 with Windows 2000 Datacenter Server, but also contains a unique change control program to ensure a stable and reliable solution over time. The joint Compaq and Microsoft Support Center provide an enterprise level support program.

Table 1 provides guidelines for selecting the Windows 2000 Server version for your business.

Table 1. Choosing the right server version

Windows 2000 Server	Windows 2000 Advanced Server	Windows 2000 Datacenter Server
Multipurpose operating system for all sizes of businesses	Operating system for e-commerce and line-of-business applications	Operating system for the most demanding levels of availability and scale
File and print, web server, group mail	Line-of-business, dot-com backend usage	Large-scale line-of business and enterprise dot-com usage
Scales from 1 to 4 processors, up to 4 GB	Scales from 1 to 8 processors, up to 8 GB	Scales from 1 to 32 processors, up to 64 GB
Components tested through Microsoft Windows Hardware Compatibility Labs (WHCL)	Components tested through Microsoft Windows Hardware Compatibility Labs (WHCL)	Systems tested through the Datacenter HCL
Reliable and available	Enhanced reliability and availability through two-node clustering, 32-node network load balancing	Maximum reliability and availability through four-node clustering, 32-node network load balancing

For additional information on Microsoft Windows 2000 Server products, visit the Microsoft web site: <http://www.microsoft.com/windows2000/default.asp>.

Why Compaq ProLiant Servers

Compaq offers an advantage in your Microsoft Windows 2000 deployment. Windows 2000 was designed and tested on Compaq equipment ensuring complete interoperability and compatibility. Compaq is the only outside equipment manufacturer (OEM) to participate in the original Rapid Deployment Program (RDP) with Microsoft. This enabled Compaq to join in the input for design and performance characteristics of Windows 2000. Compaq was also a Joint Development Partner (JDP) for Windows 2000. All events, conferences, and labs for the RDP were powered by Compaq and more than two thirds of all RDP/JDP participants piloted and planned deployment of Windows 2000 on Compaq ProLiant servers.

As market leaders, Compaq and Microsoft move enterprise technology to industry standards. Working together, we reduce the complexity, risk, and cost of deploying and managing industry-standard products, services, and solutions. Compaq engineers have spent thousands of hours in development and testing to offer products, solutions, and services guaranteed to lower total cost of operation (TCO) and boost overall performance.

Compaq has the largest Windows 2000 trained and certified workforce with 3,400 Microsoft professionals to offer service and support unmatched in the industry.

Products

Compaq leads the way in revolutionizing the economics of network computing with reliable, stable industry-standard solutions. Compaq products offer innovations designed to enhance quality, reliability, maintainability, performance, and TCO. Even the Compaq quality pledge reflects the commitment to listen to you in order to deliver the highest quality products, services, and solutions to ensure value and contribute to your success.

Compaq offers its award-winning ProLiant servers with scalable storage solutions for a complete hardware strategy. Innovations, such as PCI Hot Plug and Online Volume Growth, make Compaq solutions reliable, available, and scalable.

The close working relationship with Microsoft, experience and performance with Windows 2000, and engineering innovations make Compaq ProLiant the best server for Windows 2000 environments.

Compaq ProLiant Servers

In 2001, Compaq shipped its five-millionth ProLiant server exhibiting the continuing trust of customers in the premier family of Compaq servers. Our engineering expertise and close working relationships with customers and Microsoft in designing, integrating, and testing servers allow us to design a comprehensive line of servers that best address customers' needs for their Windows 2000 server environments. Leading software companies often develop their applications on ProLiant platforms, providing the most stable and interoperable environment.

Compaq offers a complete line of industry-standard servers in the ProLiant series. In addition to the reliability and ease of use with Windows 2000 that Compaq provides, ProLiant servers are manageable and scalable.

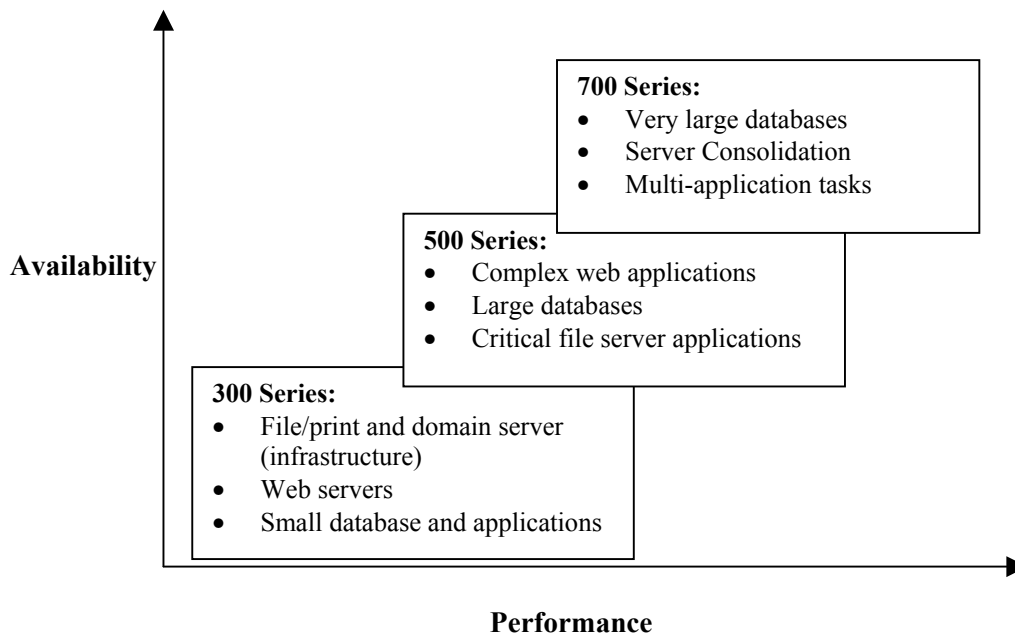
The ProLiant family platforms make it easy to select the correct ProLiant server based upon your business needs. You can choose from three lines based on your environment:

- CL—packaged for simplified clustering
- DL—optimized for rack-mount environments
- ML—maximized for internal system expansion

You can choose from three series numbers within each of the lines for the server designed to fit the needs of your applications.

Figure 1 shows the wide range of products available in the ProLiant line of servers.

Figure 1. ProLiant server applications



Compaq Advanced Memory Protection

Compaq offers three levels of Advanced Memory Protection that provide increased fault tolerance for applications requiring higher levels of availability: Online Spare Memory, Hot Plug Mirrored Memory, and Hot Plug RAID Memory. All three levels maintain server availability and memory reliability without service intervention. Online Spare Memory is beneficial to customers with sites that cannot afford downtime from memory errors, yet can wait until a scheduled downtime to replace failed memory modules. Hot Plug Mirrored Memory allows failed memory modules to be replaced without shutting down the server. Compaq Hot Plug RAID Memory delivers the highest level of server availability, providing hot-replace, hot-add, and hot-upgrade capability.

Compaq PCI-X Enabled Servers

Compaq, Hewlett-Packard, and IBM worked together to develop the PCI-X technology. In June 2001, the Compaq ProLiant DL760 8-way server was one of the first to include PCI-X technology and earned greater than 60 percent market share leadership. This technology increases both bandwidth and bus performance streamlining the bottlenecks often caused by heavy input/output demands from enterprise applications, such as Fibre Channel, Ultra3 SCSI, SAN interconnects, and Gigabit Ethernet. PCI-X technology has doubled the maximum clock frequency from 66 MHz to 133 MHz and nearly doubles the I/O capacity. Additionally, PCI-X is fully backward compatible with conventional PCI products.

As the leader in development of PCI-X technology, Compaq has introduced the Golden Master Program to provide best-in-class PCI-X solutions to the industry. Golden Master Program members include several industry leading vendors, selected by Compaq, who are licensing PCI-X technology and providing added value to best serve their customers. Compaq provides Golden Master participants valuable tools and information that will simplify and accelerate industry adoption of PCI based products. It should be noted that PCI-X Specification is an open industry standard and available from the PCI Special Interest Group (SIG) as an addendum to the PCI Local Bus 2.2 Specification.

Compaq ProLiant Clusters

Compaq High Availability Cluster products are designed and rigorously tested to ensure outstanding performance and seamless integration within your IT environment to ensure the highest levels of up time for your most critical applications and data. Customers now have more choice and flexibility to create the best high availability solution for their IT and business needs. Compaq products provide clustered solutions across the entire line of industry standard ProLiant servers on all major operating systems, including Windows NT/2000. Additional information on Compaq ProLiant Clusters can be found at the following web site:

<http://www.compaq.com/highavailability>

Compaq provides a full range of cluster solutions to meet every customer's high availability requirements. There are three main product groups in the ProLiant Cluster Family:

- **ProLiant CL380.** The ProLiant CL380 consists of two Compaq server nodes and shared storage; pre-packaged in a cost-effective, space efficient cabinet giving customers the easiest, most affordable clustering solution for Windows 2000. The ProLiant CL380 is ideal for remote systems requiring unattended high availability, Branch Office industry applications (retail, health care, financial), and dedicated function servers needing high availability.

- **ProLiant DL380 Packaged Cluster.** The ProLiant DL380 consists of two Compaq ProLiant server nodes and a shared storage cabinet, pre-packaged in a cost effective, space efficient fixture giving customers the most affordable clustering solution for Microsoft NT Enterprise Edition and Windows 2000 Advanced Server. Performance, availability and storage capacity have been greatly improved with embedded Ultra3 SCSI controllers, greater memory capacity, numerous redundant features and an improved StorageWorks shared storage cabinet that provides up to 1 TB of storage with 14 hot plug drives. The ProLiant DL380 Packaged Cluster remains the unsurpassed, entry-level cluster solution that simplifies the purchase, configuration and management of your clustered environment.
- **ProLiant Cluster HA/F100 and HAF200.** The ProLiant Cluster HA/F100 and HAF200 use Compaq ProLiant servers, combined with StorageWorks RA4100 storage, to provide a redundant fibre channel-based cluster system. This is an ideal high availability solution for customers requiring fibre channel Storage Area Network (SAN) connectivity and the flexibility to use the right ProLiant server that meets their processing requirements.
- **ProLiant Cluster HA/F500.** The ProLiant Cluster HA/F500 uses Compaq ProLiant servers combined with StorageWorks MA8000/EMA12000 fibre channel storage, to provide a highly redundant, scalable enterprise level cluster solution. This is ideal for customers who demand the highest levels of performance, availability, scalability, and capacity. Additionally, the ProLiant Cluster HA/F500 Enhanced Disaster Tolerant (DT) configuration provides a disaster recovery solution that separates the cluster nodes and mirrored storage by distances of up to 100 km. The ProLiant Cluster HA/F500, with ProLiant 8500 servers, also provides the basis for clustered Windows Datacenter Server high availability environments.

Online Volume Growth

Online Volume Growth, incorporated into the SANworks Virtual Replicator offers the ability to grow NTFS volumes on basic disks, guides the user in capacity planning, and extends existing driver letters. With easy-to-use Wizards, it allows Windows 2000 system administrators to dynamically expand a virtual disk and a basic disk without rebooting the server.

To grow your virtual disks, you add new storage units, assign them to an existing storage pool, and then use the additional capacity to expand any of the virtual disks associated with the pool. You can grow a volume on a basic disk by creating additional space on the disk into which the volume can expand. SANworks Virtual Replicator grows the existing volume onto available storage and revises the disk block mapping. The file system recognizes the changes dynamically. The system remains online throughout the process, the data on the volume remains intact, and system administrators avoid rebuilding servers due to insufficient disk space.

Services

Compaq Global Services provides full lifecycle support for your Microsoft Windows 2000 deployment. Services include design and implementation, planning, and management and support of your network. With 28,000 service professionals in more than 200 countries, Compaq offers the most comprehensive 24x7 support in the business.

Compaq Global Services supplies support services for Windows 2000 in modules. You choose the modules you want:

Architecture scan

The Compaq Solution Architect Methodology helps customers discover how the advanced features of Microsoft Windows 2000 benefit their unique infrastructure and address their business needs.

Readiness assessment

Compaq defines a detailed set of customer requirements and functionality needs for the Windows 2000 platform.

Design review

This service prepares your current infrastructure for a smooth transition by assessing your current environment, network, and hardware readiness to determine the level of effort required to migrate to Microsoft Windows 2000.

Pilot

Experienced consultants assist and advise customers as they test the interoperability and features of Microsoft Windows 2000 in a controlled environment.

Planning and design

Compaq Services consultants help customers develop a detailed Microsoft Windows 2000 infrastructure design and transition plan based on their extensive experience in similar projects.

Implementation

Use our proven project methodology and Microsoft Windows 2000 tools to deploy your new infrastructure smoothly and efficiently.

FutureSourcing

FutureSourcing provides the capability, capacity, and global coverage to deploy and manage Microsoft Windows 2000. You can make the move more quickly and productively, with less risk, by relying on Compaq expertise to take full responsibility for the migration and ongoing management. You focus on where your business needs to go while Compaq gets you there.

Installation and startup

Compaq Services tailors the installation and startup phases of Microsoft Windows 2000 to meet the needs of large or small environments.

Management and support

These post-implementation services ensure that you enjoy maximum benefit from your Microsoft Windows 2000 investment and include 24x7 support and infrastructure management.

Availability services

These services provide different response levels designed to maximize your business' availability.

Compaq Global Services offers a complete portfolio of Windows 2000 services and has the experience and expertise to complete the migration of your network with minimal risk to your business. For more information on Global Services offerings, visit <http://www.compaq.com/services/windows2000/index.html>.

Intelligent Manageability

Compaq Intelligent Manageability is built into every Compaq ProLiant server simplifying IT management. Compaq provides information products and service professionals to assist you with every step in your Microsoft Windows 2000 migration process. Compaq Intelligent Manageability tools include Compaq SmartStart, Compaq SmartStart Scripting Toolkit, Compaq Resource Partitioning Manager, and the Compaq Array Configuration Utility.

After completing your migration, Compaq provides tools to manage your hardware and software keeping your network running at optimal levels. Management tools include Compaq ActiveUpdate, Compaq Insight Manager 7, Compaq Proactive Remote Service, Compaq Management Pack for MOM, Compaq Survey Utility, and Compaq Remote Insight Lights-Out Edition. For more information on Compaq Intelligent Manageability tools, visit <http://www.compaq.com/manage>.

Compaq SmartStart

Compaq SmartStart provides intelligent server configuration, software installation and tuning assistance via a graphical tool ensuring a reliable setup of Compaq ProLiant servers. It configures and optimizes the hardware, simplifies the process of loading the operating system, installs any specialized device drivers and loads support utilities. Compaq SmartStart for Servers is shipped standard with every Compaq ProLiant Server. For additional information about Compaq SmartStart, visit <http://www.compaq.com/smartstart>.

Compaq SmartStart Scripting Toolkit

The Compaq SmartStart Scripting Toolkit delivers unattended automated installation for high-volume server deployments. The SmartStart Scripting Toolkit, a modular set of utilities, supports the Compaq ProLiant DL and ML series servers. Using SmartStart technology, the Scripting Toolkit provides a flexible way to create standard server configuration scripts.

Deployment methods include across-the-net installation, software imaging, and custom CD-ROM. The SmartStart Scripting Toolkit provides rack and go deployment, virtual presence server deployment, SmartStart technology for configuration and optimization of hardware, and replication utilities.

The SmartStart Scripting Toolkit offers scripting support for Compaq Remote Insight Lights-Out Edition (RILOE). The Lights-Out DOS Utility allows scripting of basic configuration of RILOE features exposed through F8 Config and the RILOE graphical user interface. For continued administration of advanced settings, use the Lights-Out Configuration Utility shipping in both the Toolkit and the RILOE board. For debugging and troubleshooting, use the command-line switches included with the configuration utilities that displays errors and allow you to pause

during the execution of the scripts. For additional information on the SmartStart Scripting Toolkit, visit <http://www.compaq.com/manage/toolkit.html>.

Compaq Array Configuration Utility

The Array Configuration Utility simplifies array configuration and facilitates online capacity expansion as a graphical user interface. There are two versions of the Array Configuration Utility; one runs from bootable diskettes and the other runs online from the operating system. Each offers the ability to manage the arrays for any of the Compaq SMART-2 Array Controllers, Compaq Smart Array Controllers, Compaq Integrated Smart Array Controller, and Compaq StorageWorks RAID Array Controllers.

Compaq ActiveUpdate

Compaq ActiveUpdate keeps IT administrators directly connected to Compaq for proactive notification and delivery of the latest software updates. This web-based application subscription provides updates for server, desktop, workstation, and portable models. On a user-defined schedule, this service proactively delivers software updates to the customer site.

ActiveUpdate delivers software updates formatted with easy to understand titles and descriptions. Updates can be sorted by date delivered, title, and system platform. Detailed software descriptions make it easy for IT administrators to get the information they need for critical bug fixes, to make proactive deployment decisions, or to simply keep systems up and running at peak performance levels. ActiveUpdate simplifies the software maintenance process when used in conjunction with the new Compaq Version Control Repository Manager or Compaq Insight Manager 7. For additional information on Compaq ActiveUpdate, visit <http://www.compaq.com/activeupdate>.

Compaq Insight Manager 7

Compaq Insight Manager 7 is the next generation of Compaq management technology incorporating the strengths of Compaq Insight Manager (Win32) and Compaq Insight Manager XE. It also delivers new functionality designed not only to help diagnose system fault, performance and configuration management, but to also facilitate system software maintenance throughout the server lifecycle. With Compaq Insight Manager 7, critical management information is available from any location accessible via a LAN, WAN, or secure remote connection, so systems administrators have the information and tools that they need when they need them.

Compaq Insight Manager 7 can manage a variety of systems including Compaq ProLiant servers, clusters, desktops, workstations, and portables. It also manages third-party devices instrumented to the Simple Network Management Protocol (SNMP), the Distributed Management Interface (DMI), or the Hypertext Transfer Protocol (HTTP). Because Compaq Insight Manager 7 comes equipped with a SNMP Management Information Base (MIB) compiler, it is possible to receive and correctly interpret events from third-party platforms.

Compaq Insight Manager 7 provides SSL encryption for data privacy as well as user administration and authentication integrated with local, NT domain, or Windows 2000 Active Directory accounts. It also makes extensive use of RSA Public Key technology to ensure that only authorized users can take advantage of sensitive and potentially data-destructive features. For additional information about Compaq Insight Manager 7, visit <http://www.compaq.com/products/servers/management/cim7-description.html>.

Compaq Proactive Remote Service

Compaq Proactive Remote Service is a monitoring and problem reporting capability enabling Compaq ProLiant servers to automatically and proactively report service problems directly to Customer Support Centers. This service is available at no extra charge with qualified Compaq service contracts. Compaq Proactive Remote Service provides detailed service event information to Compaq service professionals allowing them to minimize potential problems and maximize service response. For additional information about Compaq Proactive Remote Service, visit http://www.compaq.com/services/hardware/hw_proliant_cprs.html.

Compaq Resource Partitioning Manager

Compaq Resource Partitioning Manager is an easy-to-use, GUI-enabled tool that extends the Windows 2000 operating system to give IT administrators the power to dynamically optimize their ProLiant servers. Resource Partitioning Manager increases server utilization by controlling system resources available to individual applications.

Resource Partitioning Manager provides easier management of complex environments, improving overall server utilization and enabling Windows 2000 customers to confidently deploy multiple applications on a ProLiant server. For additional information about Compaq Resource Partitioning Manager, visit <http://www.compaq.com/rpm>.

Compaq Management Agents

Compaq Management Agents are an essential component of Compaq Intelligent Manageability strategy, and an enabler of "virtual presence". Compaq management strategy pivots around extensive manageability embedded into its management products, which makes Compaq servers the best-managed servers in the industry. Compaq Management Agents provide the instrumentation to enable fault, performance, and configuration management, and reduce down time by providing predictive fault management.

The web-enabled Compaq Management Agents are accessible either directly through a browser or through a management application such as Compaq Insight Manager 7 or third party systems management application. Compaq Management Agents are installable as four separate components: Compaq Foundation Agents, Compaq Server Agents, Compaq NIC Agents and Compaq Storage Agents. Over 1000 parameters are proactively monitored by Compaq Management Agents. For additional information about Compaq Management Agents, visit <http://www.compaq.com/products/servers/management/agents.html>.

Compaq Support Paq Remote Deployment Utility (RDU)

The Compaq Support Paq Remote Deployment Utility (RDU) application remotely deploys driver and management agent updates to network servers that can be operated from the IT administrator's workstation. This utility is designed to work with the new Compaq Support Paqs (CSPs) and simplifies the software update process by deploying them from a central software repository. The RDU provides a simple, one-step method for deploying updates using standard browser features

The RDU provides a convenient way to select a server for a deployment by simply clicking on the server in the network neighborhood view. In addition, RDU can be scripted to remotely deploy CSP updates using command line prompts. For additional information about the Compaq Support Paq Remote Deployment Utility (RDU), visit <http://www.compaq.com/manage/rdu.html>.

Compaq Survey Utility

Compaq Survey Utility takes the comprehensive reporting functionality of Inspect and delivers it in an online format. This online capability means that servers running business-critical applications do not require a shut down to collect the critical information required for a service call. Not only can Compaq Survey Utility be run while the server is online, but its initial install can be completed without ever having to restart the server making it a true online service tool.

Compaq Survey Utility captures both hardware information and operating system parameters. By combining hardware and software configuration captures, Compaq Survey Utility delivers a comprehensive view of the server with the ease and simplicity of a single tool.

Another important benefit of Compaq Survey Utility relates to its ability to identify recent configuration changes. Recent configuration changes are often the source of the problems manifesting on the server. The ability to quickly generate comprehensive configuration snapshots and highlight specific changes enables problem resolution time to be significantly reduced.

The information gathered by Compaq Survey Utility can be accessed locally at the host server console. For additional information about the Compaq Survey Utility, visit <http://www.compaq.com/support/files/server/us/locate/2045.html>.

Compaq Management Pack for Microsoft Operations Manager 2000 (MOM)

Microsoft Operations Manager 2000 and Compaq Intelligent Manageability tools are complementary. The Compaq Management Pack for MOM enables hardware, configuration, and performance related events generated by Compaq Management Agents and written to the Windows Event Log to be displayed from within MOM. The Compaq integration provides knowledge base data for fast problem analysis, and over 600 predefined rules for automated event processing, including pre-failure alarms for hard drives, memory and CPUs.

The Compaq Management Pack was developed in partnership with NetIQ. This tool increases systems availability and enables operating system, application and hardware events to be monitored through the Windows Event Log and a common MOM interface.

In addition to the Compaq entry-level solution, NetIQ in partnership with Compaq will develop an Extended Management Pack (XMP) to expand the functionality of the Compaq Management Pack for MOM. For additional information about the Compaq Management Pack for MOM, visit <http://www.compaq.com/products/servers/management/mom/index.html>.

Compaq Remote Insight Lights-Out Edition

Compaq Remote Insight Lights-Out Edition, designed and priced to provide remote server management in corporate data centers and remote sites, allows browser access to Compaq servers through a seamless, hardware-based, OS-independent graphical remote console. Hardware-based, it requires neither additional software nor any host server CPU cycles.

To see a Flash demonstration of the capabilities of Remote Insight Lights-Out Edition, visit

http://www.compaq.com/manage/rib_lo.swf

The on-board graphical remote console capability turns the client browser into a virtual desktop, no matter what operating system the host server is running or what state it is in.

Remote Insight Lights-Out Edition also includes additional new features, such as a virtual power button, DNS/DHCP IP auto-configuration, and ROM-based configuration capability. It also continues to provide the rich suite of remote management features available with the Compaq Remote Insight Board/PCI.

Remote Insight Lights-Out Edition can be used to deploy headless servers that do not require a monitor, keyboard, or a mouse eliminating associated cabling complexity.

For more information about Remote Insight Lights-Out Edition, visit <http://www.compaq.com/manage/remote-lightsout.html>.

Why Compaq and Microsoft Windows 2000

Compaq continues to work with Microsoft in testing and developing products, services, and solutions that take greater advantage of all the Windows 2000 features. In addition, Compaq provides a host of online resources available to speed your Microsoft Windows 2000 solution.

- **Frontline Partnership website**

This website contains the latest information on Compaq offerings for Microsoft Windows 2000 including news, technical support, product updates and information, special offers and promotions, and the latest breaking news on the Compaq and Microsoft partnership. Visit the Frontline Partnership website at <http://www.compaq.com/windows2000>.

- **ActiveAnswers**

This innovative Compaq website simplifies the planning, deployment, and operations for your Microsoft Windows 2000 or Microsoft Windows NT Server 4.0 business solution. ActiveAnswers eliminates the need to learn complex configuration and integration details with its tools, sizers, and white papers providing systematic instructions for planning, deploying, and managing hardware and software solutions. To view this site, go to <http://www.compaq.com/activeanswers>, click the **Infrastructure & Architecture** link, and then click the **Microsoft Windows 2000** link under the Network Operating Systems & Operating System Software section.

- **Windows Advantage**

Windows Advantage serves as the primary resource of IT leaders for timely, reliable, and credible information to aid in the planning and deployment of Microsoft Windows on Compaq ProLiant platforms. Windows Advantage is produced by Computerworld Enterprise Business Solutions and underwritten by Compaq and Microsoft. This online web magazine addresses issues that most concern IT managers charged with keeping their companies on top of the latest solutions Microsoft and Compaq have to offer. It provides peer-to-peer information not available anywhere else, including case studies, Q & As, resources, roundtables, columns, and more. For the latest issue of Windows Advantage, visit <http://www.windowsadvantage.com/>.

- **Win2TV**

Sponsored by the Compaq Microsoft Frontline Partnership, *Win2TV*, an interactive streaming-media show, changes the way businesses stay informed on Compaq and Microsoft solutions. In this short, yet informative, 30-minute program format, *Win2TV* highlights the successes and challenges that come with migrating to Microsoft Windows 2000. Addressing areas on both the server and client sides with professional reporting and quality production, *Win2TV* is reaching thousands of business and IT executives representing companies from the Global 500 to the smallest dot-coms, <http://www.compaq.com/win2tv>. *Win2TV* serves as another communication vehicle for educating customers on Windows 2000 and the Compaq unique value proposition

Summary

Compaq ProLiant servers are your best choice for a Windows 2000 platform. Compaq ProLiant servers and Microsoft Windows 2000 together offer the reliability, scalability, availability, and manageability features you need with the expertise, innovation, and solutions performance you expect from Compaq.

Appendix A—Certified Products

Compaq supports Microsoft Windows 2000 on the following ProLiant servers:

ProLiant 400	ProLiant 5500 and Xeon	ProLiant CL380	ProLiant ML330 e
ProLiant 800	ProLiant 6000 and Xeon	ProLiant DL320	ProLiant ML330
ProLiant 850R	ProLiant 6400R	ProLiant DL360	ProLiant ML330 G2
ProLiant 1200	ProLiant 6500	ProLiant DL380	ProLiant ML350 G2
ProLiant 1500	ProLiant 6500R	ProLiant DL380 G2	ProLiant ML350
ProLiant 1600	ProLiant 7000 and Xeon	ProLiant DL580	ProLiant ML370
ProLiant 1850R	ProLiant 8000	ProLiant DL590/64	ProLiant ML370 G2
ProLiant 2500	ProLiant 8500	ProLiant DL580	ProLiant ML530
ProLiant 3000		ProLiant DL590/64	ProLiant ML570
ProLiant 4500		ProLiant DL760	ProLiant ML750
ProLiant 5000			

Due to the strict requirements for testing, certification, and life-cycle change management, Compaq supports a limited server list with Microsoft Windows 2000 Datacenter:

ProLiant 8500 Data Center (single server, 2- and 4-node cluster)

ProLiant DL760 (single server, 2- and 4-node cluster)

Appendix B– Microsoft Windows 2000 Architecture Improvements

The table below illustrates the principal architectural improvements in Microsoft Windows 2000 over previous versions.

Table 2. Microsoft Windows 2000 architectural improvements with descriptions

Features	Description
Windows File Protection	Verifies the source and version of a system file before it is initially installed, preventing the replacement of protected system files.
Kernel-Mode Write Protection	Prevents kernel-mode software from silently corrupting other kernel-mode code, providing kernel and memory protection.
Reduced Number of Reboot Conditions	The number of operations that require a system reboot has been greatly reduced. The top 75 “reboot scenarios” have been eliminated.
Developer Tools for Third Parties	Windows 2000 tools and programs are available to third party developers to improve the quality of their drivers, system level programs, and application software, resulting in code that is more dependable.
Service Pack Slipstreaming	Automates Service Pack deployment by maintaining one master image of the operating system on the network.
Recovery Console	Command-line console utility from which administrative and system repair tasks can be performed.
Safe Mode Boot	Booting in Safe Mode allows users to troubleshoot the system during start up by changing the default settings or removing a newly installed driver that is causing a problem.
Kill Process Tree	Allows the Task Manager to stop a single process, or any processes created by the parent process, in a single operation - without requiring a reboot.
Recoverable File System	Windows 2000 file system logs all disk I/O operations as unique transactions, allowing the file system to return quickly to a known, functioning state by undoing or redoing transactions.
Automatic Restart	Configures services across the operating system to restart automatically if they fail.
IIS Reliable Restart	A new faster, easier, and more flexible IIS one-step-restart process.
Storage Management	A collection of storage management features that avoid problems and ease administration.
Kernel-Only Crash Dumps	In case of a server crash, copies out to disk just the kernel-related memory contents. This reduces the size of the dump and the time required, speeding up recovery.
Mini Dumps	Mini dump files contain only the specific information needed about application failures troubleshoot and correct the problem.
Faster CHKDSK	Up to 10 times faster, depending on the configuration, than the previous version.
MSINFO	Aids immediate troubleshooting by showing the current system configuration.

continued

Table 2. Microsoft Windows 2000 architectural improvements with descriptions *(continued)*

Features	Description
Remote Terminal Services	Allows administrators to view and manage their complete Windows 2000 environment from a single console making it easier to manage the network.
SMP Improvements	SMP code implementation improvements allow for improved scaling linearity.
Clustering	Advanced Server: two node fail-over Datacenter: four node fail-over
Network Load Balancing	Balances large amounts of network traffic across several servers, increasing throughput and availability.
WinSock Direct	This communication protocol can be used instead of TCP/IP. It provides efficient high-bandwidth, low-latency inter-process communication between hardware and application components distributed within a SAN.
Process Control Tool	Allows administrators to manipulate Job Objects to set, track, and manage parameters such as an application's maximum memory use, application priority, and application processor affinity.