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Prepared by OS integration Engineering

Compaq Computer Corporation

Contents

Server Consolidation with Compaq ProLiant Servers

Abstract: This white paper addresses the many benefits of server consolidation on industry-standard Compaq ProLiant servers. Server consolidation is an industry trend that optimizes physical resources, consolidating applications onto fewer, more powerful servers and centralizing the management of many business critical applications.

For more information about server consolidation, visit the Compaq website: http://www.compaq.com/solutions/serverconsolidation/.

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Notice

Server Consolidation with Compaq ProLiant Servers
White Paper prepared by OS integration Engineering

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The IT Balancing Act

Many IT professionals find themselves carefully balancing many problems simultaneously, forced to respond to the disparate needs of the many departments they support, IT specialists often struggle to meet the requests of their organization. A common method of reacting to changing demands involves adding equipment. This procedure often solves immediate problems, but later reveals unforeseen consequences. This balancing act tends to trickle down to a common industry problem – high total cost of ownership.

Trends towards Standards

Industry wide trends reveal that most major corporations are migrating from custom-designed, proprietary platforms to more economical, standardized systems running fewer operating systems. Beyond the obvious cost savings are powerful benefits, such as highly expandable systems and easy to use shrink-wrapped applications. These trends stem from IT organizations' growing need to reduce the total cost of ownership of servers, storage, and labor while maximizing processing power.

Server Consolidation Defined

The act of balancing many problems simultaneously forces IT organizations to be reactive, ultimately spiraling costs out of control. Server consolidation stems from the acceptance of industry - standard systems and the need to reduce the total cost of ownership.

Server consolidation involves optimizing hardware resources to increase staff productivity and reduce labor requirements, reducing total costs. Placing systems at core locations enables IT organizations to effectively respond to emerging business challenges, simplifies data management, reduces space requirements and helps control the overall cost of ownership. As the world's largest computer supplier of industry - standard computing hardware platforms, Compaq is able to provide the most reliable and cost-effective server consolidation solutions.

Compaq ProLiant servers lead the industry in reliability, are designed for optimal space utilization, and include system management tools that empower IT staffers to manage more servers in less time. The primary benefits of consolidation involve reducing costs and increasing reliable access to data and computing resources.

Server consolidation can help reduce the following costs:

- Personnel - reduced number of servers and centralized server management leverages precious IT resources, improves response times, decreases server downtime and increases productivity.
- Data control and security - server consolidation provides more consistent and reliable access to data.
- Hardware - equipment standardization leads to economies of scale as initial purchase and maintenance of smaller numbers of servers reduces overall hardware costs.
- Software licensing fees - reducing the number of servers required to support clients means less application licensing fees.

Server Consolidation – The Four Types

When it comes to server consolidation, there is no shortage of terminology to confuse or confound you. There are four common topologies of server consolidation:

- **From many to fewer consoles -** ITCentrix calls this a **distributed** server consolidation. Gartner and IDC call this a **logical** topology. Servers remain in the same location, but the number of consoles is reduced providing a standardized way of managing the servers, connecting them to the network and the user community and consolidating the management of applications and databases. This solution relies on cluster technology, system management applications, and ERP applications to link the servers together. Figure 1 illustrates this consolidation type.

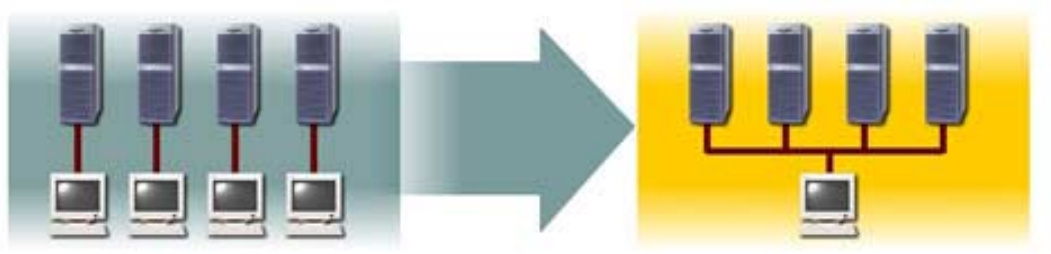

Figure 1: Illustrates the topology of logical or distributed server consolidation

- **From many to fewer locations –** Gartner calls this type of consolidation **physical** consolidation and it involves moving widely distributed servers into more centralized locations, and consolidating systems and data centers from multiple sites. Physical consolidation involves two types of server consolidation: systems and storage.

Figure 2: Illustrates the topology of physical server consolidation

- **From many to fewer servers -** Gartner calls this **rational** and IDC calls it **workload**. This topology means consolidating applications and databases on fewer, more powerful servers, it allows the customer to streamline server resources, standardize servers and applications, reduce total cost of ownership, and increase performance. Refer to Figure 3 for a visual representation of this consolidation type.

Figure 3: Illustrates the topology of rational or workload server consolidation

- **From distributed to Dynamic Allocation -** IDC calls this a **transparent** server consolidation type and ITCentrix calls it the **IT center of the future**. This topology provides customer access capacity on demand, employs flexible technology implementations, such as Galaxy or storage or server utility, operate in a highly automated environment, and executes in real-time. Figure 4 represents the transparent server consolidation type.

Figure 4: Illustrates the topology of transparent server consolidation

From Many to Fewer Consoles – Logical or Distributed Server Consolidation

Corporations relying on business critical applications often benefit from application management capabilities, a core feature of logical consolidation.

Organizations likely to benefit from logical consolidation rely on business critical applications such as ERP, business intelligence, e-commerce, Internet, Intranet, mail and collaboration products.

Because these applications are often difficult to control, they benefit from management applications that ease their administration and reduce downtime.

With logical consolidation, application management tools improve availability, significantly reduce downtime and decrease IT labor costs. Logical consolidation centralizes IT support staff and gives them the ability to manage centrally located or distributed applications.

Additionally, this type of consolidation automates tasks and applies application management across many systems at once to resolve common problems such as disk space utilization and software updates.

Benefits of logical or distributed consolidation

The many benefits of logical consolidation include:

- Extended uptime - by proactively monitoring system resources and solving application problems before they fail.
- Increased administrator productivity - by automating and centralizing tasks, making it easier to maintain or improve network, systems and application performance.
- Reduced total cost of ownership - by minimizing the number of man-hours required to perform installations, upgrades and application management.
- Improved application availability - by reducing planned and unplanned downtime, assuring users access to network and computing resources.

Tradeoffs of Logical or Distributed Consolidation

Management software costs, installation labor and time are all factors that can inhibit a management application installation.

Research has revealed tradeoffs of logical consolidation can be offset if a proper solution is implemented. The primary challenges of installing software are the labor required to install the solution and the time needed to fully implement a solution. An installation can take months to fully implement and IT staffers must be trained to fully use the functionality of management tools.

International Data Corporation (IDC) performed a study identifying specific manageability features on Compaq systems, administration software tools and general practices that reduce the cost of using PCs and servers. The study provides unambiguous verification that businesses can achieve an extremely favorable return on investment over a wide range of metrics by installing manageable desktop and server products along with complimentary administration tools. The value of improved application availability and enhanced set-up and automation of the process created total annual savings averaging $410,000 per 100 users over a five-year period leading to a return on investment in just 77 days.

Benefits of Using Compaq for Logical or Distributed Consolidation

The Compaq partnerships with major independent software vendors such as BMC, CA, Tivolli and others, coupled with powerful Compaq products help you plan, deploy and operate application management tools. Additional benefits include:

- Compaq SmartStart installation CD-ROM decreases the time required installing and upgrading servers. This automated tool surveys systems and configurations, enabling easy manageability of upgrades.
- Compaq Insight Manager XE manages an unlimited number of servers from a single console. It provides device management capabilities that consolidate and integrate management data from Compaq and third-party devices using SNMP, DMI and HTTP. With Compaq Insight Manager XE, you can monitor and manage groups of servers, clients, clusters and networking products anywhere, anytime from a standard web browser.

- Compaq SmartStart Scripting Toolkit delivers an unattended automated installation for high volume server deployments. The SmartStart Scripting Toolkit was designed to support the new line of Compaq ProLiant DL and ML series servers. The toolkit includes a modular set of utilities and important documentation that describes how to apply these new tools to build an automated server deployment process.
- Compaq Remote Insight Lights-Out Edition provides seamless, hardware-based, OS-independent graphical remote access to Compaq ProLiant servers using a standard browser. It requires no additional software on server or client browser
- Compaq "*ActiveAnswers*" empowers administrators with unparalleled access to information that can aid in the management of major applications. To subscribe to this service, visit the Compaq website: http://www.compaq.com/activeanswers/.

To find out more about the Intelligent Manageability tools, visit the Compaq Intelligent Manageability website: http://www.compaq.com/manage/.

From Many to Fewer Locations - Physical Consolidation

Physical consolidation involves reducing the number of servers and centralization of resources to reduce operational costs, which includes adding, moving or upgrading existing server resources. There are two types of physical consolidation, systems and storage. The benefits and tradeoffs of each are unique and described detailed in the following sections.

Systems Consolidation

Corporations with physically dispersed computing resources may benefit from consolidating and updating systems into fewer locations to ease physical systems management and reduce overall expenses.

Organizations that may benefit from systems consolidation often have applications and servers in separate departments, rooms and even buildings across the globe. As systems become more distributed, managing, repairing, and upgrading them becomes more difficult and costly. Corporations need to carefully weigh the business benefits of distribution in light of the cost benefits of consolidation.

With systems consolidation, corporations rework and upgrade their network so that resources are located in a smaller number of locations.

Consolidating systems enables enterprise management of physical resources from fewer locations, quick identification and resolution of problems and it can significantly reduce overall expenses. In addition, the installation of newer hardware and software can increase performance, capacity and fault-tolerance of the entire infrastructure.

Benefits of Systems Consolidation

Consolidating and upgrading systems and resources into fewer locations provides significant benefits, including:

- Reduced number of servers and storage devices – making efficient use of floor space enabling multiple servers and storage devices to be stacked in a single rack.
- Reduced costs - as a function of fewer systems performing greater tasks.

- Increased physical security - enabling all hardware to be locked and monitored in fewer locations.
- Improved data security - as the number of platforms decrease, accessing data can be monitored more effectively.
- Increased administrator productivity – allowing engineers to spend more time on server-related issues and less time on non-server administrative functions, such as traveling to remote sites to trouble shoot, and upgrade systems.
- Enhanced reaction time - due to physical proximity, allowing for proactive monitoring of systems to help administrators to quickly solve problems and reduce downtime.
- Simplified upgrade procedures – are the result of fewer locations, reducing staffing requirements.
- Improved capacity planning – provides for applications to be run from fewer servers in centralized locations.
- Increased network performance – due to closer physical proximity of servers enabling high-speed connections among servers and the network.

Tradeoffs of Systems Consolidation

There are some situations where systems consolidation might not be cost effective. For example, if an organization's servers are supporting extremely remote locations (such as U.S. based servers supporting locations in Asia-Pacific regions of the world), network infrastructure costs may outweigh the benefits of consolidation. In addition, organizations that are distributed by design, such as retail chains, may benefit by distributing computing resources while centralizing the management of those resources.

There are general tradeoffs for nearly all organizations implementing server consolidation. Significant up-front expenditures may be required to redesign the corporate network architecture. In addition, centralizing physical equipment opens a corporation to greater risks in disaster situations. When downtime does occur, it may affect a larger number of users. Clustering and other fault tolerant features can help increase the high availability of data. Finally, the administration staff should be prepared for increased need for telephone support from remote users.

Benefits of Using Compaq for Systems Consolidation

Organizations distributed by design, such as retail chains, may not realize significant cost saving with systems consolidation. As the largest manufacturer of Intel based industry standard servers, Compaq has the broadest array of services and support for your systems consolidation efforts.

An important reason to consider Compaq for your consolidation needs and upgrade efforts is the completeness with which Compaq can satisfy your needs. Compaq manufactures the industry's most compact, expandable, and complete line of Intel-based servers. Compaq also has professional services to provide configuration consulting and implementation of your solution.

Compaq can collaborate with you during each step of planning, design and implementation to ensure the success of your consolidation effort. Compaq ProLiant servers are rack optimized for the data center, ProLiant workgroup servers start at 5.25 inches (3U) tall and the ProLiant 4-way and 8-way processor enterprise servers start at 7U in height enabling up to 6 servers or 48 processors in an industry standard 42U rack. Compaq also has a sleek 1U server for the ultra-dense rack environment of the growing dot-com or the internet service provider (ISP).

Storage Consolidation

Organizations that benefit from storage consolidation, a form of physical consolidation, often have a dedicated and rapidly growing storage capacity for each server in their network.

Corporations with dedicated storage pools for each server in their network may benefit from storage consolidation using highly available and manageable features.

Whether servers are centralized or distributed, dedicated disk and tape volumes deter data sharing, complicate information security, make backups more difficult to administer, and greatly increase the cost and complexity of growing a storage farm. As the importance and volume of data grows, continuous access becomes critical and data management becomes more complex.

Storage consolidation provides pools of highly available, flexible and centrally managed storage distributed to provide the performance and availability demanded by applications. In addition, storage consolidation enables organizations to better manage growth, control security, and information access, and it provides rapid response to changing business demands. Figure 5 shows how multiple servers have access to a shared storage repository.

Figure 5: Storage consolidation allows multiple servers to access a shared storage repository

Benefits of Storage Consolidation

Storage consolidation provides numerous benefits to organizations, including:

- Highly scaleable storage enables administrators to manage growth and quickly respond to changing business needs.
- Highly available and fault tolerant storage provides continuous and reliable access to data.
- Improved centralized data management and protection via consolidated storage.
- Increased storage utilization from allocating storage via a centrally managed pool of storage.
- Reduced administrative costs and time required for troubleshooting problems.
- Platform independence thus enabling sharing of data and simplified backup procedures.

Tradeoffs of Storage Consolidation

Storage consolidations numerous benefits include a few notable tradeoffs. It is important to consider disaster recovery scenarios when centralizing data into a single location. Storage consolidation may require a significant initial cash outlay to obtain large RAID units as opposed to simply adding hard drives to a system. Existing investments in RAID and tape backup may become obsolete as larger arrays and automated tape backup libraries replace them. Compaq Network and Systems Integration Services team will help you plan your consolidation efforts, assuring a smooth and cost efficient implementation.

Benefits of Using Compaq for Storage Consolidation

Compaq is the world's largest storage supplier and is also the only storage vendor that ensures high availability and reliability, high capacity and high performance storage, with solutions for applications ranging from the desktop to the data center.

Other benefits include:

- The Compaq Enterprise Network Storage Architecture (ENSA) provides a highly flexible environment for data storage capacity and management. This advanced technology creates "virtual disks" from a large pool of consolidated storage. The storage pool is physically distributed as business needs require. A storage pool can consist of a number of small, relatively inexpensive "array controllers" that are deployed as needed. Storage growth is granular down to a disk drive. In addition, ENSA preserves much of today's storage hardware investment. Only ENSA offers the range of configuration, performance tuning, monitoring and data protection capabilities needed to unify an enterprise storage environment. ENSA is designed to grow as business needs require, while maximizing the protection of your existing storage investments.
- The Compaq StorageWorks Command Console, a Windows NT based monitoring and configuration tool can manage up to 1.2 petabytes of data distributed across an enterprise from a single workstation. Its easy to use features include failure notification, reliability monitoring and multiple levels of security.

From Many to Fewer Servers - Rational or Workload Consolidation

Corporations experiencing dramatic expansion and growth often benefit from consolidating workload tasks into fewer, more powerful systems and applications.

Organizations well suited for rational consolidation have experienced dramatic growth that resulted in complex solutions for workload related tasks. Situations such as corporate mergers and global expansions create redundant, incompatible workgroup practices, including financial applications, office productivity tools, Intranet applications, e-mail and customer management applications.

Rational consolidation combines different workgroup applications onto standardized enterprise applications, running on fewer and larger servers, optimizing labor usage, and reducing overall costs.

Benefits of Rational or Workload Consolidation

The many benefits of rational consolidation include:

- Reorganization of complementary resources into a singular workflow environment (e.g. order entry and general ledger).
- Decreased downtime in a centralized single application environment because problem-resolution staff is locally accessible.
- Reduced application licensing fees as a single application replaces the workload of many applications.
- Increased resource utilization in large-scale global environment.
- Reduced total cost per user as a function of decreased software and overhead expenses.

Tradeoffs of Rational or Workload Consolidation

When consolidating workloads, equipment must be highly fault tolerant and plans must be made to reduce planned and unplanned downtime.

Consolidating workload activities presents notable tradeoffs that require advance planning. A major challenge when centralizing workloads is the requirement for increased fault tolerance. A failure or even planned downtime in a consolidated environment can affect a great number of individuals and have an adverse effect on the productivity of an entire organization.

Equipment must be highly reliable and fault tolerant to minimize failures. Rational consolidation may place a larger burden on the staff supporting remote users, therefore organizations considering rational consolidation need a plan to deal with backup and scheduled downtime. Additionally, as a function of current operating systems, the industry-standard platform has limited capabilities when operating multiple applications on a single server.

Compaq AlphaServer and Himalaya platforms may be better suited for more intensive rational consolidation efforts. The net benefit of any rational consolidation effort is a streamlined IT infrastructure that can better leverage the IT staff while assuring greater reliability for the users and lower capital costs for the corporation.

Benefits of Using Compaq for Rational or Workload Consolidation

A principal reason to use Compaq for all of your rational consolidation is the Compaq industry leadership in fault tolerant solutions. With applications that can predict component failure and redundant components such as storage controllers, power, fans and hard drives, Compaq provides the fault tolerance demanded for rational consolidation. Additional benefits include:

- Compaq "*ActiveAnswers*" empowers administrators with unparalleled access to information that can aid in the planning, deployment, operation and trouble shooting of popular applications ranging from Oracle databases to SAP. For more information visit http://www.compaq.com/activeanswers/.
- Compaq provides services to aid in the consolidation to a standard platform. These professional services include business critical assistance with high availability planning as well as network and systems integration services. If you would like information about the Compaq Server Consolidation Program, visit: http://www5.compaq.com/services/ or http://www.compaq.com/solutions/serverconsolidation/more-info.html.

- Compaq hardware and software provides the industry's most powerful and standardized solutions for your rational consolidation efforts. Highly scaleable and rack mountable, Compaq servers can handle up to 1 terabyte of storage each, can contain multiple processors, extensive memory and an array of networking equipment. Compaq server platforms offer optimum availability, scalability, performance, and cost benefits to enable the industry's most comprehensive enterprise-level solutions. Investing in a Compaq solution is a secure way to assure that you can grow problem free for years to come.
- Compaq Financial Services can finance up to100 percent of the Compaq solution, including hardware, software, and services. Compaq Capital financial asset management services can help reduce the total cost of ownership with trade-in programs, tech refresh options and equipment disposal services ensuring implementation meets your ever-changing business needs.

From Distributed to Dynamic Allocation – Transparent Consolidation

Transparent server consolidation is a relatively new topology and is considered the consolidation of the future. This type of consolidation involves pulling together a number of IT centers across a campus or network, and implementing storage-area networks to create a single set of resources. Transparent consolidation allows the customer to access capacity on demand, employs flexible technology implementations, such as Galaxy or storage or server utility, operates in a highly automated environment, and executes in real-time.

A few benefits of transparent consolidation include:

- Server works like a utility and all system elements become virtual to the user.
- Little or no operator intervention required regardless of system(s) location.
- IT managers can manage the systems remotely, and do not need to monitor them as frequently or as carefully as in the past. There are user-friendly ways to manage the system.

Summary

Forced to respond to the disparate needs of the many departments they support, IT staffs often struggle to meet the needs of their organization. Industry trends have revealed a demand for centrally managed highly available systems that reduce administration costs and enhance the ability to respond to new business challenges. Server consolidation meets these needs head-on by consolidating operations to reduce total costs.

There are four types of consolidation efforts that address unique concerns within a typical IT department: logical, physical, rational, and transparent. Logical consolidation is the centralization of application management tools to increase uptime and IT staffs' productivity.

Physical consolidation consists of two types of material consolidation, systems and storage. Systems consolidation is the centralization and updating of server resources to fewer locations to reduce operational costs and consolidate to fewer servers that are more powerful. Storage consolidation is the standardization on a disk and tape storage platform to reduce operational overhead and increase data availability.

Rational consolidation is the consolidation of applications onto larger more powerful servers curtailing hardware and software expenses as well as operational overhead.

Transparent consolidation involves pulling together a number of IT centers across a campus or network, and implementing storage-area networks to create a single set of resources.

Together, these four categories of consolidation can significantly reduce costs and increase a corporations overall productivity levels. Compaq Computer Corporation is positioned to meet all of your server consolidation requirements. As the market leader of Intel based industry standard servers, Compaq offers an unparalleled array of services and equipment to aid in your consolidation efforts. If you need absolute reliability, Compaq has computing platforms and solutions that can meet your needs.

Regain control of your IT enterprise by contacting your authorized Compaq value-added reseller today or by visiting Compaq on the worldwide web at http://www.compaq.com.

Compaq Server Consolidation Success Stories

Many companies have experienced problems with server consolidation and have relied on the expertise of Compaq to resolve their issues. The following sections examine several server consolidation cases.

Coach - a manufacturer of premium leather goods since 1941, was experiencing problems associated with "growing pains" -- specifically around complex management and reporting. The solution included consolidating their data and applications to SAP R/3 with Oracle and Compaq AlphaServer systems, Tru64 UNIX, and StorageWorks, as well as Compaq ProLiant servers.

Compaq Services played an essential role in the database design and technology infrastructure integration. Other key partners included Deloitte & Touche and PKA Technologies (a Compaq value-added reseller working through Pioneer). To view more Compaq server consolidation success stories, visit: http://www.digital.com/info/BRB1XV/BRB1XVHM.HTM.

For CFO Mary Holley, the move to standardize was a relief. "By standardizing with Compaq, CNB shifted attention away from the hardware. Now we are free to focus on the software, and develop systems and procedures that benefit the bank and our customers."

Central National Bank (CNB) - since its 1977 founding as a neighborhood institution for local businesses, CNB has outperformed all competitors to become the largest bank in Waco, Texas. Years of rapid growth left CNB with a jumble of conflicting systems. Beginning with 2 multiprocessor Compaq ProLiant servers and 80 Compaq Deskpro 4000 systems, the bank built an infrastructure that could expand and grow with the company.

To read more of this success story visit the Compaq Server Consolidation website: http://www.success-stories.compaq.com/css/cgi-bin/cssextusr/s=display/i=511.

Nationwide Mutual Insurance - with assets of more than $60 billion, Nationwide Mutual Insurance is the fifth largest property and casualty insurer in the United States, the 14th largest life insurer in assets and the fourth largest writer of individual variable annuities.

Working together, Compaq, Microsoft, and Lotus are helping Nationwide Mutual Insurance Company migrate from eight diverse mail systems to one highly reliable, cost-effective one.

Today Lotus Notes, running on Microsoft Windows NT™ on Compaq ProLiant servers, is the primary e-mail and GroupWare communications system for more than 27,000 users at Nationwide. Benefits of the move include high reliability, as well as cost savings and simplified systems management.

Compaq Server Consolidation Case studies

Compaq has proven strengths in helping organizations plan, implement, design, and manage server consolidation efforts tailored to individual business requirements.

Below are several case studies demonstrating this involvement since 1995.

- A major publishing company consolidated 106 NetWare V3.12 servers into 15 NetWare V4.11 servers, and combined four data centers into three.
- In two months, a major pharmaceutical company consolidated 190 Windows NT server-based file/print servers into 110 file/print servers.
- A major financial institution consolidated three file servers per floor into one -- each supporting 200 users -- and implemented Microsoft Cluster Server and Fibre Channel for high availability and scalability.
- An international grocery store chain consolidated six regional centers into one central data center on NonStop™ Himalaya systems, significantly improving its margin in a highly competitive environment.
- A national retailer consolidated its databases onto Compaq NonStop™ software running on NonStop™ Himalaya servers to enhance efficiency and save operational costs.
- As part of a consolidation effort, a large US-based construction company is developing a consistent distributed database. The company is replacing 18 of another vendor's systems with two AlphaServer GS140 systems running the Tru64 UNIX operating system. At this point, the company reports improved workload throughput and better resource utilization.
- A Canadian government agency reduced its floor space costs by 80 percent by going from five servers to one server running the Tru64 UNIX operating system. As an additional perk electrical and cooling costs were substantially reduced.

If you would like to read more about Compaq Server Consolidation Solutions, visit our website at http://www.compaq.com/solutions/serverconsolidation/index.html.

Appendix A - Compaq Web Resources

In addition to hardware and software products, Compaq also provides information enabling you to stay current on the latest developments and assisting you in making deployment decisions. Table 1 lists Compaq resources on the web.

Table 1. Compaq web resources

Item	Web Location
Compaq *ActiveAnswers* gives you the benefit of our experience to help manage your system and reduce the time, risks, and complexity associated with deploying solutions.	http://www.compaq.com/activeanswers
Compaq *ActiveUpdate* offers proactive notification and delivery of the latest software updates. Do not waste time searching the web. Subscribe to Compaq ActiveUpdate for automatic delivery of software updates for your Compaq servers, desktops, workstations, and portables.	http://www.compaq.com/products/servers/management/activeupdate/index.html
Compaq Info Messenger offers you timely access to information products, which can be accessed through the Compaq website. If you submit a profile to Compaq Info Messenger, telling it what platforms and operating systems you are interested in, the service tracks your areas of interest advising you when related information products are released.	http://www.compaq.com/infomessenger
Compaq Insight Manager XE leverages the power of the Internet to provide web-based systems management for Compaq servers, and any HTTP, SNMP MIB2, or DMI v2.0 compliant device.	http://www.compaq.com/manage
Compaq Resource Paq for Microsoft Windows 2000 and Windows NT are information products specific to Microsoft which are collected and distributed as part of the Compaq Resource Paq for Microsoft produced twice a year.	http://www.compaq.com/partners/microsoft/resourcepaq.html
Compaq SmartStart for Servers provides everything you need to get your servers up and running with full Compaq support for Microsoft Windows 2000.	http://www.compaq.com/products/servers/SmartStart/index.html
Compaq System ROMPaq are available for Compaq industry-standard server products.	http://www.compaq.com/support/files/server/us/index.html
Customer Advisories inform you of any known problems and workarounds because of a Service Pack release.	http://www.compaq.com/support/techpubs/Customer_advisories/index.html
Press releases and Communiqués announce the availability of new products and versions.	http://www.compaq.com/newsroom/pr
Compaq Server Software Download Center website provides the capability to download device drivers, utilities, services, and BIOS required for Compaq ProLiant servers.	http://www.compaq.com/support/files/server/us/index.html

continued

Table 1. Compaq web resources *(continued)*

Item	Web Location
Compaq Support Paq for Microsoft Windows 2000 is an advanced software delivery tool that replaces the familiar SSD utility vehicles used for support of Windows NT 3.51 and Windows NT 4.0. The Compaq Support Paq for Microsoft Windows 2000 includes an installer that analyzes system requirements and installs all drivers.	http://www.compaq.com/support/files/server/us/index.html
Compaq Survey Utility gathers critical hardware and software information to give comprehensive server configuration information. It allows resolution of problems and streamlines the service process without taking the server off-line.	http://www.compaq.com/support/files/server/us/index.html
White Papers (complete listing) inform you of ways to optimize your environment and obtain the maximum benefit from software enhancements.	http://www.compaq.com/support/techpubs/whitepapers/index.html