



IBM Netfinity Enterprise Storage Solutions

Serving your growing storage needs—protecting your investment and your data

Executive Summary

IBM is the pioneer and leader in data storage. IBM also developed the mainframe, the computer of choice for decades to handle the massive flow and control of data in very large industries such as finance and insurance. As smaller, less expensive, but equally powerful computers have become the “mainframe” equivalent for small- to medium-size businesses, IBM has harnessed the expertise and experience that went into our mainframe systems—resulting in IBM Netfinity® X-architecture—and has brought it to the industry-standard enterprise server environment.

In September 1997 IBM introduced the first server in the Netfinity product family, which has been developed in response to the need for systems to take on many of the tasks once managed solely by “enterprise-class” servers, or mainframes. Central to those tasks is the ability to store the critical data necessary to run a business successfully. Equally important is the ability to retrieve that data when and where it is needed. This requires an enterprise storage system. Servers alone can’t do the job. When data storage requirements exceed the built-in capacity of servers, servers need to access a data storage system. A vital element of an enterprise storage system is management software that provides a centralized and integrated approach to managing corporate data. IBM offers a wide range of enterprise storage solutions and the management software that help meet your enterprise requirements and guard against the loss of business-critical data.

IBM's Netfinity enterprise storage management solutions are part of IBM's ongoing storage area network (SAN) strategy. This paper provides an overview of IBM Netfinity Enterprise Storage solutions today. Because of the dynamic nature of the computer industry, changes may occur in IBM's actual implementations and timing of product announcements.

Introduction

IBM has an unparalleled history of technology leadership, service and support in the enterprise systems marketplace. Not only did IBM invent magnetic disk storage, we currently hold some 650 patents and many awards for our storage technology and customer solutions in the past 40 years. As customers in the Intel processor-based server environment expand their networks into business-critical arenas, IBM is applying its vast experience in storage and storage management to help meet their needs.

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In 1999, the phenomenal growth in storage requirements within the enterprise will be fueled by Web-based applications such as e-commerce, enterprise resource planning (ERP), data mining and data warehousing, and ever-increasing e-mail and office programs. These applications will drive technologies such as Fibre Channel-attached storage subsystems, storage area networks (SANs), four- to eight-way Intel® Xeon™ based systems, server clustering and faster, higher capacity disk drives. Each of these advancements separately would drive incremental storage requirements, but taken together, they mean an unprecedented demand for capacity and performance. Adding disk capacity to your networked server system is a fairly easy task. Devising and implementing a comprehensive, enterprise-wide strategy for maximum control, power, scalability and service is not. That's where IBM's products and experience help you control your environment more precisely, with less effort than ever before, to extend the capacity and function of your system, and to protect your vital business data.

And IBM stays with you after your purchase— our 90 Day Start Up Support program, three-year limited on-site warranty, Remote Connect for “call home” remote support, the worldwide IBM HelpCenter®—all of these help customers with installation, configuration and problem resolution quickly and efficiently.

IBM's Netfinity Enterprise Storage solutions are designed and optimized to complement the full range of product offerings in the Netfinity line. IBM's Netfinity Options by IBM portfolio of storage products is the broadest in the industry, with leadership technology that is constantly being refreshed and improved. Among the products in the portfolio are the following:

- Hard disk drives (HDDs)
- Tape backup solutions
- IBM RAID for Netfinity servers
- Fibre Channel storage solutions
- Storage expansion solutions
- IBM rack solutions
- SAN components
- Clustering solutions

Enterprise Storage: What Is It? What Does It Require?

Enterprise storage is an emerging industry-standard term for a set of technologies that IBM pioneered in the mainframe computing space. These technologies provide the quality, reliability, high availability, scalability and data protection to keep businesses up and running. Enterprise storage addresses the needs of businesses as they increase their technology investment and consolidate their information storage platforms. This requires the ability to assemble information as a single management entity that can be shared among all computing platforms regardless of physical location, and managed in a secure, efficient way.

IBM's storage patent leadership and long-term involvement with every facet of enterprise storage enable us to understand the diverse challenges that you face in this environment. It also helps us develop solutions to meet these challenges and take

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advantage of business intelligence, increased Web performance, tape backup, high-speed communications and disaster recovery solutions.

IBM solutions make this possible with Netfinity X-architecture, which brings the outstanding characteristics of mainframe and midrange computing to industry-standard servers: high availability, powerful performance, massive scalability, redundancy, centralized storage and problem prevention through alerts and notifications of potential disruptions.

IBM Netfinity X-architecture and Enterprise Storage

IBM is committed to delivering products with proven, reliable technology while helping you reduce the total cost of ownership of enterprise-class computing. This commitment is expressed in IBM's Netfinity X-architecture, which takes the best management capabilities from larger IBM systems and adapts them into a framework that will integrate with a wide range of industry-standard, customer-chosen management and operating system environments.

The following is a summary of the key elements of Netfinity X-architecture that have been incorporated into selected Netfinity servers.¹ They include powerful processors, core logic, reliable and highly available memory systems, scalable I/O, advanced caching software and world-class silicon and module technology. Netfinity X-architecture also includes clustered systems featuring technology from IBM's industry-leading S/390® and RS/6000® SP™ product lines, as well as interoperability with existing large and midrange systems.

Netfinity X-architecture is evident in these enterprise storage features in selected Netfinity servers:

- Fibre Channel-attached storage options for scalable, highly available, cluster-enabled storage, improved security and disaster protection
- Hot-plug HDDs, power supplies, fans and PCI slots for availability and reliability
- Clustering solutions for continuous system availability and performance scalability
- Light-path diagnostics to improve availability and serviceability
- Integration with enterprise systems management software such as Tivoli™ Management Software, Microsoft® SMS and Intel LANDesk® for management flexibility

Netfinity Fibre Channel Enterprise Storage Options

Fibre Channel is a technology, similar to a high-speed network, that can be used to connect large amounts of disk storage to an enterprise server or server cluster. Fibre Channel supports increased performance, scalability, availability and distance for attaching storage subsystems to enterprise-class servers. IBM's Netfinity Fibre Channel products provide this technology and the benefits it offers to businesses requiring enterprise storage solutions.

¹ To learn more about Netfinity servers, see "Additional Information" at the end of this paper and visit the Netfinity Web site at: www.ibm.com/netfinity.

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For solutions requiring extremely high bandwidth, cabling distance and high availability, Netfinity Fibre Channel subsystems provide scalability to hundreds of terabytes of storage, 100MBps throughput and distances of up to 10 kilometers (6 miles) between the server and external disk storage to provide additional protection of data.

Implementations will include SCSI-over-Fibre solutions to leverage existing investments in SCSI disks and products such as the EXP15, as well as Ultra3 SCSI and solutions that utilize Fibre Channel-attached HDDs in the future.

Netfinity Fibre Channel subsystems and Netfinity EXP15 storage expansion units can be used to attach up to 36TB² of disk storage to a single PCI expansion slot. Using Netfinity Fibre Channel subsystems, which support single server or N-node cluster configurations, over 432TB can be attached to a single Netfinity 7000 M10 server or cluster.

IBM Netfinity Fibre Channel storage solutions can support the massive data storage requirements of business-critical applications and provide the scalability needed to meet the increased demands of a growing enterprise. For example, because Netfinity Fibre Channel storage solutions can support distances between the server and storage subsystems up to 10km (6mi.), companies can more easily configure off-site server and storage systems to keep critical data available around the clock—even in the event of a catastrophe.

An excellent example of the use of a highly available enterprise storage subsystem is for clustering, which permits the partnering of several servers and their fault-tolerant systems to keep up with end-user demand for data. Utilizing Netfinity Fibre Channel storage solutions in this scenario provides high-bandwidth, high-performance interconnectivity links between servers and external storage. Netfinity Fibre Channel storage solutions' high-speed data transfer also helps eliminate storage bottlenecks, so clustering in the enterprise is more powerful, and more flexible, than ever before.

Available IBM Netfinity Fibre Channel enterprise storage products include the following:

- **Failsafe RAID Controller Units:** a single hot-pluggable RAID controller standard; dual active redundant controller as an option, thus eliminating the problems caused by a single point of failure that can exist in other companies' products; RAID levels 0, 1, 3 and 5; 128MB battery-backed cache; 6 Ultra2 SCSI (also known as low voltage differential SCSI or LVDS) drive channels supporting up to 60 HDDs (as opposed to the limit of 8–12 in other solutions); redundant, hot-pluggable power supplies and fans
- **PCI Adapters:** 100MBps speed; Fibre Channel direct drive short-wave optical to 500m (1640ft) rather than the 25m (82ft) limitation imposed by copper cable, also thereby eliminating electrical interference and ground shift problems caused by copper cable, which is still used by some other vendors; optional long-wave optical, which drives 10km (6mi.); 64-bit PCI bus master data transfers up to 264MBps; compatible with 32-bit PCI
- **Hubs:** 7 ports for short- or long-wave optical connections provided by optional hot-pluggable short- and long-wave gigabit interface converters (GBICs); supports N-way clustering; 4 short-wave GBICs included as standard

² When referring to hard drive capacity, TB means one trillion bytes. Total user-accessibility may vary depending on operating environments.

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As enterprise storage requirements continue to increase—especially as more companies compete in the ever-growing, high-demand, no-room-for-errors arena of worldwide e-business—IBM intends to continue to enhance the performance, capacity and reliability of IBM Netfinity Fibre Channel storage solutions to help businesses keep up with information demand.

RAID. Utilizing a Redundant Array of Independent Disks (RAID) is an excellent way of protecting storage data for businesses of all sizes, to help ensure the high availability and protection of business-critical applications and data—the key resources around which an enterprise revolves. The recently introduced IBM ServeRAID-3 family offers exciting new possibilities for expanding RAID capabilities.

The 64-bit ServeRAID-3H adapters (IBM Netfinity servers have assumed a leadership role in making high-performance, 64-bit technology available to customers) support scalability: over 1TB of external storage per adapter and over 8TB of total external storage when used with selected Netfinity servers and Netfinity EXP15 storage expansion units.

The single-channel ServeRAID-3L is for less demanding network environments or for departmental use. Both ServeRAID-3s offer Ultra2 technology capable of long SCSI cable lengths at impressive data transfer speeds.

Advanced features, including IBM's logical drive migration, disk auto-rearrange and disk data scrubbing make ServeRAID adapters an excellent choice for enterprise storage needs.

The IBM Serial Storage Architecture (SSA) RAID adapter option is yet another IBM innovation in storage technology. A full range of SSA RAID options complements our expansive portfolio of storage options, all of which provide industry-leading availability of data stored in your enterprise's networked systems.

For users who prefer SSA disk technology, the IBM SSA RAID adapter option provides up to 1.7TB of external storage connected over longer distances than SCSI can support.

All three IBM RAID adapters support Microsoft Cluster Server (MSCS) two-node configurations for high availability. The ServeRAID-3H adapters also support two-node NetWare clusters.

The newest IBM Netfinity servers are incorporating even higher levels of performance by implementing industry-standard enhancements to the PCI bus. This includes support for 64-bit PCI, which is used by the ServeRAID-3 and Netfinity Fibre Channel subsystems to support data rates up to 264 Mbps.

When paired with the Netfinity 7000 M10 enterprise server, the enterprise-class ServeRAID-3H provides benchmark-leading performance³ today, with room for growth tomorrow, making it particularly suitable for clustering. The 3H also lets you add an optional 32MB battery-backed-up cache that can actually save your data even if the system loses power. Having 32MB on the base adapter and 32MB on the battery-backed-up cache enables data mirroring, so that in the event of a base card or optional cache card failure, enterprise business-critical data is saved. This redundancy in IBM's Netfinity enterprise storage solutions results in the high availability required for enterprise computing.

³ On January 12, 1999, IBM shattered the Windows NT scalability barrier with the industry's first-ever 1TB TPC-D benchmark on Windows NT. Using a 32-node cluster of Netfinity servers running IBM DB2 Universal Database, IBM set a new record for price/performance and power for 1TB of user data. For specific performance data, see the Netfinity performance Web site at www.pc.ibm.com/us/techlink/srvperf.html.

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IBM RAID Manager. Offering differentiation beyond hardware technology and integrated into IBM Netfinity Manager™, RAID Manager lets you monitor, manage and configure an assortment of enterprise storage RAID adapters and arrays without taking the RAID system offline to perform maintenance. RAID Manager can gather data about a system's RAID array and adapters, rebuild failed drives, add or remove physical drives, perform data integrity tests and other RAID system tasks. This service is available for both stand-alone and network use by any system that has a supported RAID adapter. Netfinity Manager supports all IBM SCSI RAID adapters.

Hard disk drives. IBM invented the first hard disk in 1956 and has remained the industry leader for more than 40 years. Our extensive line of HDDs includes industry-leading SCSI and SSA interfaces and hot-swap hard drives, with storage capacities up to 36.4GB at rotational speeds up to 10,000rpm (again, Netfinity servers were among the first to make 10,000rpm HDDs available to customers). And we have multiple, high-quality sources for our HDDs to help ensure continuity of supply, unlike the single-sourcing of HDDs by other vendors.

SCSI HDD expansion solutions. For increased HDD expansion, look to the enterprise-class 10-bay Netfinity EXP15. The 3U⁴ rack-mountable EXP15 offers high data availability thanks to redundant components that include powerful, hot-pluggable fans and power supplies. Further, by allowing increased cable distances (because of support for Ultra2 SCSI technologies), the EXP15 can be located away from the server, promoting the growth of DASD farms and other flexible storage configurations. The Netfinity EXP15 also offers investment protection by providing a high-performance platform for mounting future generations of HDDs required by your growing business—allowing up to 5TB of storage.

SSA storage expansion units. The IBM SSA disk subsystem is another high-availability enterprise storage management solution. Like the Netfinity EXP15, its rack-mountable design has hot-pluggable fans and power systems and can operate at greater distances from the host server for increased floor space flexibility. If SSA is your storage technology of choice, you should know that IBM offers the widest range of SSA components in the world.

Tape storage solutions. Reliable, high-capacity tape backup solutions that protect your data are essential. You can restore availability to users across your system in the event of a system failure. Tape backup can help avoid an estimated **\$3000 per MB** re-creating lost data.

For a total backup solution, the value and proven reliability of IBM tape backup technology makes good sense for your business. Tape offers the lowest cost per GB for backup and archival storage and uses the lowest-cost media. IBM offers a complete line of tape products in most popular industry-standard tape formats and capacities (4GB to 1TB). Available formats are: DLT, DAT, Magstar, 8mm and Travan NS.

External tape backup solutions. As backup needs increase, consider the storage management possibilities of IBM tape libraries, which deliver up to 1050GB of data backup capability. With the new Netfinity NetMEDIA Storage Management Unit EL, the options for external storage are greatly increased. The EL can house two DLT or four 8mm, DAT or Travan tape drives in a Netfinity rack or stack solution. When used with the Netfinity NetMEDIA Systems Management Adapter, the NetMEDIA EL can help implement tape mirroring or arrays for even greater data security.

⁴ A single "U," or rack unit, is 44.45mm or 1.75 inches.

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All tape drives for Netfinity servers ship with award-winning Seagate Backup Exec at no additional charge. This upgradable, industry-leading software provides comprehensive protection for your data, as well as your investment in it .

Additionally, the NetMEDIA Systems Management Adapter provides the added benefit of an Ultra2 LVDS channel that handles both Ultra2 and earlier generation SCSI devices.

IBM rack solutions. In environments where floor space is at a premium, easy access to critical components can be maintained with an IBM rack solution. An IBM rack solution can conveniently house multiple servers, SCSI or Netfinity Fibre Channel solutions, an uninterruptible power supply (UPS) or NetMEDIA and EXP15 Storage Expansion Units.

With the innovative NetBAY3™ stackable enclosure you can add up to three pedestals—for a total of 9U of expansion space—in your Netfinity server system. For more space, the NetBAY 22 half-height rack offers 22U capacity, and the full-size IBM Netfinity Rack has 42U capacity, capable of holding up to eight servers (or five when configured with a console and a UPS).

An optional, 3U IBM UPS reduces the risk to business data by protecting the system against power fluctuations and short breaks in the mains power supply. It also means minimum disruption of business by alerting the processor of an imminent failure for a controlled power-down, protecting critical data, and a smooth transition to generator-supplied power for faster system recovery in case of a disaster.

Storage management. In addition to the hardware components, for large enterprise storage management consider IBM's ADSTAR® Distributed Storage Manager (ADSM). ADSM, a key component in IBM's SAN strategy, is an enterprise storage management solution that enables centralized, integrated management of enterprise data. It incorporates these features:

- Integration that allows data management and data protection functions to work together
- Management that allows distributed data (including local and remote storage systems) to be managed from a centralized point within the enterprise
- Interoperability that supports the heterogeneous SAN environment and enables high availability, helping ensure that you get the intended benefits of enterprise storage
- Scalability that supports ever-increasing amounts of data and types of enterprise applications

ADSM provides:

- An enterprise storage management solution with automated, unattended backups, long-term data archives and hierarchical storage management (HSM) operations
- Easy-to-use Web browser and graphical user interfaces (GUIs) for daily administrative and user tasks
- Online, incremental backup and recovery for Lotus® Notes® databases
- HSM capability to automatically move infrequently used data from workstations and file servers onto an ADSM storage management server, reducing expensive workstation and file server storage
- A Disaster Recovery Manager (DRM) feature to help plan, prepare and execute a disaster recovery plan

IBM Netfinity Manager. IBM Netfinity Manager is a powerful software suite designed to manage networked Intel processor-based servers and other components in the enterprise storage environment you currently have. One of the most important elements of Netfinity Manager for enterprise storage is Predictive Failure Analysis[®] (PFA), with its extensive alerting and real-time diagnostics: PFA can detect actual and potential future system component failures—and send notifications about them—to prevent problems before they occur and keep your business up and running.

This technology is resident in selected Netfinity servers and includes power supplies and fans, as well as all of the HDDs supported on Netfinity systems. PFA coverage also includes processors, system memory, power subsystems and voltage regulator modules.

IBM Netfinity ServerProven[®] program. The IBM Netfinity ServerProven program, part of the Netfinity Enterprise Storage Solution strategy, takes the complexity out of configuring, installing and setting up options and network operating systems.⁵ We've carefully tested hundreds of products from Options by IBM and other leading industry vendors for compatibility with IBM Netfinity products, so you can add new capabilities with confidence.⁶ And we have expanded our ServerProven program to incorporate ServerProven Solutions, a commitment by IBM to work with independent software vendors and industry-leading hardware manufacturers to provide you with fully integrated solutions that meet your business needs.

Unrivaled Service and Support

IBM, with 40 years of service and support for enterprise-class customers, now provides the same type of unparalleled service and support to Netfinity enterprise storage systems. IBM's limited, three-year on-site warranty⁷ provides hardware problem-determination on-site, as well as remotely, with IBM's latest technology and tools. Labor and IBM parts are covered for the full duration of the warranty period, including parts identified during Predictive Failure Analysis and the installation of required engineering changes. This warranty offers far more than the typical industry-standard warranty. For example, when you add Options by IBM to a Netfinity server, they assume the warranty term of the server on which they are installed. International warranty service is also available.

And IBM's warranty supports you 24 hours a day, 7 days a week, 365 days a year.⁸

⁵ IBM makes no representations or warranties, expressed or implied, regarding non-IBM ServerProven products and services, and disclaims all such warranties including but not limited to Year 2000 readiness and the implied warranties of merchantability and fitness for a particular purpose. These products are offered and warranted solely by third parties.

⁶ A complete list of ServerProven Solutions and ServerProven options can be accessed at www.pc.ibm.com/us/netfinity/serproven_index.html.

⁷ For terms and conditions or copies of IBM's limited warranty, call 1 800 772-2227 in the U.S. Limited warranty includes International Warranty Service in those countries where this product is sold by IBM or IBM Business Partners (registration required). Telephone support may be subject to additional charges.

⁸ Response time varies. May exclude some holidays.

90-day IBM Start Up Support. In addition to our warranty coverage, and included with the purchase of any IBM Netfinity server, 90-day IBM Start Up Support is a comprehensive program designed to speed installation of hardware and system software, as well as assist in resolving other technical challenges associated with the installation of new systems. To maximize the value of your investment and resolve issues during the first critical 90 days from installation, you'll receive installation, setup and configuration support for:

- IBM Netfinity and PC Servers
- Network operating systems, including: Novell NetWare, OS/2® Warp Server, Microsoft Windows NT®, SCO OpenServer and UnixWare, and NCD WinCenter and WinFrame
- Selected network interface cards (NICs), such as IBM, 3Com, Madge Networks and Standard Microsystems Corporation (SMC)

IBM HelpCenter. Easy-to-use electronic access to IBM experts is available by phone, fax, bulletin board, commercial on-line services and the Internet.⁹ IBM is also introducing interactive Web-based forums, monitored around the clock by IBM specialists, complementing its support on all the major Internet service providers. And, customers can purchase extended services at any time during their IBM hardware warranty period.

Remote Connect... "Call Home" Remote Support. Using the latest technology advances delivered by select models of the Netfinity product line, IBM offers a "Call Home" remote support feature. If your server experiences a problem, it will dial IBM and set in motion the right level of support to keep your system up and running. And, you can select options to have IBM contact you or your approved warranty service provider.¹⁰

For more information visit www.pc.ibm.com/techinfo/6342.

MoST Connect... A Direct Communication Link to the Experts. Leveraging the latest technology advancements in Netfinity systems and Netfinity Manager, IBM increases its on-site support by enhancing the Mobile Solution Terminal (MoST), carried by our server field-service representatives. MoST Connect provides a direct communication link between the IBM field service specialist at your location and the experts at the IBM HelpCenter. Continuing to improve on-site support, IBM delivers remote-console capability with both voice and data communications through a Netfinity system's serial port.

MoST Connect allows the HelpCenter support specialist to perform remote problem determination and launch additional resources, including product engineering if required, to solve a server problem. MoST Connect enables the HelpCenter to assemble a pool of skills and be *virtually* on-site to address the most complex problems without delay.¹¹

⁹ Response time varies. May exclude some holidays.

¹⁰ Remote Connect availability is limited to certain mainstream and high-end Netfinity servers (U.S. only) and supports selected network operating systems. Remote Connect is offered exclusively through IBM Global Services.

¹¹ MoST Connect is not yet available in all countries. MoST Connect is offered exclusively through IBM Global Services.

Update Connector. Update Connector is another, automated service on the electronic-support Web site for updating the latest Netfinity server BIOS and driver files. Connecting and executing through the Web, Update Connector searches your system's configuration, determines the levels of BIOS and drivers currently installed and notifies you of the latest levels. At your discretion, Update Connector can send you the latest versions for your system and prepare them for installation at your convenience.

Conclusion

The phenomenal growth in enterprise storage requirements in 1999 and beyond will be fueled by Web-based applications. These applications in turn drive technologies such as Fibre Channel-attached storage subsystems, storage area networks, four- to eight-way Intel Xeon processor-based systems, server clustering and faster, higher capacity disk drives.

The evolution of these technologies requires a comprehensive, enterprise-wide strategy for maximum control, power, scalability and service. IBM—with its vast storage experience and expertise, and the broadest server and options portfolio in the industry—is the only vendor that can provide the hardware and software solutions essential for business success in this environment. These IBM solutions provide the quality, reliability and high availability required for effective, secure enterprise storage. IBM's enterprise storage solutions also offer investment protection for existing equipment and applications, the assurance that in the open environment of today and tomorrow they will not have to be sacrificed to gain the benefits of the new technologies.

Add to this industry-leading storage capability IBM's unsurpassed service and support, and you have a complete solution for your Netfinity enterprise storage systems. The result is that the IBM Netfinity systems management features allow you to run your business-critical applications with the confidence that they will be available to your end users when they need them. This means that you no longer spend too much time managing your IT assets. Instead, you spend that time managing your business.

Additional Information

For more information on IBM Netfinity direction, products and services, refer to the following white papers, available from our Web site at www.pc.ibm.com/netfinity.

Lotus Domino Clusters Overview

Lotus Domino Clusters Installation Primer

Implementing IBM Netfinity Server Management

Integrating IBM Netfinity Manager with Microsoft System Management Server

Integrating IBM Netfinity Manager with Intel LANDesk Server Manager

Integrating IBM Netfinity Manager with Microsoft Systems Management Server

IBM Netfinity ESCON Adapter

IBM Netfinity System Management Processor

IBM Netfinity Hot-Plug Solutions

IBM Netfinity Storage Management Solutions Using Tape Subsystems

IBM Netfinity Technology Trends and Directions

IBM Netfinity Servers and Intel Architecture

IBM Netfinity 8-Way SMP Directions

IBM Netfinity Cluster Directions

IBM Netfinity Fibre Channel Directions

IBM Netfinity Server Ultra2 SCSI Directions

Fulfilling your storage needs

IBM Netfinity System Management for Servers

IBM Netfinity Server Quality

IBM Netfinity Predictive Failure Analysis

IBM Netfinity Web Server Accelerator

IBM Netfinity X-architecture

IBM Netfinity 5500 Server Family

IBM Netfinity 7000 M10 Server

IBM ServerGuide for Netfinity and PC Server Systems

Achieving Remote Access Using Microsoft Virtual Private Networking

At Your Service...Differentiation beyond technology



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Personal Computer Company
Department LO6A
3039 Cornwallis Road Research Triangle Park
NC 27709
Printed in the United States of America

2-99

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IBM Netfinity servers and PC servers are assembled in the U.S., Great Britain, Japan, Australia and Brazil and are comprised of U.S. and non-U.S. parts.

Are you Year 2000 ready? Visit www.ibm.com/pc/year2000 or call 1 800 426-3395 (and request document number 10020 from our faxback database) for the latest information.

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