IBM Netfinity Systems Management for Servers

Powerful tools to manage your networked business

Executive Summary

The complex IT environment is evolving at a rate that, just a few years ago, would have been unimaginable. And the rate will undoubtedly increase in the future, as new technologies make even more rapid change possible. In this environment, IT professionals are faced with a bewildering variety of manageability tools. They need to keep system availability high and to solve problems quickly and efficiently. But the tools available have few if any common characteristics and provide little or no integration. This means that you spend too much time managing IT assets and too little managing your business.

IBM understands the consequences of not having your networked systems available and operating reliably when you need them. If your network administration tools fail, you can lose literally thousands of dollars a minute, depending on the applications running on your system. IBM's goal is to provide a systems management solution that will provide you with comprehensive control of your IBM Netfinity® servers in this complex environment and enable you to spend more time on your business.

Our strategy is threefold:

- Provide a standards-based foundation to remove confusion and complexity as technology evolves. This is intended to help remove the guesswork from the industry offerings. The foundation will be based on existing standards, and IBM's alliance with other industry leaders such as Tivoli, Microsoft and Intel will help ensure that you have access to the cutting edge of technology.
- Provide industry-leading control of IBM Netfinity servers in heterogeneous environments. We will accomplish this by offering tools that allow you unparalleled control of your Netfinity system during its life cycle—from procurement through retirement or disposal. These tools are designed to help you reduce your total cost of ownership.
- Provide seamless integration with leading enterprise and workgroup managers, for a comprehensive solution built on a management foundation that fits with your existing assets and grows with your business. Our strategy can support a variety of management strategies you choose because our foundation and value-add tools integrate seamlessly with Tivoli Management Software, Microsoft System Management Server (SMS) and Intel® LANDesk®.

Central to this strategy are the "building blocks" for Netfinity manageability: the server hardware and its instrumentation, the system management processor and the server management software. Designed to work in concert, they can help you deploy and install your hardware, physically manage your operations and assets and provide remote support and maintenance. The bottom line? The systems management solution for IBM Netfinity servers allows you to run your business-critical applications with the confidence that they will be there when your end users need them—7 days a week, 24 hours a day, 365 days a year.

Manageability Challenges and Requirements

Businesses today continue to decentralize their IT assets and consolidate their IT skills. They are doing this with new tools and technology that can offer more, and better, functionality, but often at the cost of increased complexity. The solution to this problem is **smarter** systems management—not simply "systems management," but the efficient, productive and proactive administration of IT assets within the business. Smart systems management enables early warning of impending problems and allows quick solutions to those problems remotely. IBM's Netfinity servers, with advanced and remote management capabilities, provide that management, no matter what size your networked business is. Some models provide such benefits as warning when the EC memory threshold is being reached, predictive failure analysis (PFA) for rapid identification of the failing component, automatic server restart and IBM's light-path technology to alert you to an impending problem with a vital component of your server.

Advanced management can help users produce a wealth of benefits, many of which go directly to the bottom line: reduced downtime, increased productivity, reduced service and support costs, and the ability to focus on running the business rather than managing the systems.

The first challenge is to give administrators more control with less complexity that, until now, no one has been able to meet successfully. The second challenge is to provide the solution that helps significantly reduce the total costs associated with systems over their entire life cycle—from deployment to managing and troubleshooting. IBM Netfinity servers meet those challenges.

Role of the Server

Your servers are critical to your business success. Whether you use them as print and file servers or for e-business or as application servers, you can't afford to be without them at any time.
If your servers are not available, your business can lose money, and perhaps a great deal of it.

Several solutions are available to help keep your servers up and running. One is the use of clusters, which provide high availability through fail-over operations: If one server fails, another takes over operations with no disruption. Second is the use of redundant server components such as power supplies, fans, processors, hard disks and more. A third is database and server replication for high availability of data. Fourth is PFA, which allows you to anticipate a component's failure and replace it before it can damage equipment or data.

IBM Netfinity servers have manageability built into the hardware, system management processor and software, the three building blocks of IBM's Netfinity system management solution. Plus they offer the power, scalability, control and service your business demands to run complex applications, move massive amounts of data and connect all of your networks for seamless operation—with manageability, reliability and availability around the clock.

IBM Netfinity Server Hardware and Instrumentation

IBM Netfinity server hardware is the first building block of the Netfinity systems management solution. It provides excellent manageability, in part because of its architecture and instrumentation. Three important elements are PFA, environmental monitoring and the front-panel LEDs. Working together, they facilitate troubleshooting and service, which in turn can save you time and money.

PFA for such vital components as power supplies, fans, DASD, processors and memory enables early detection of problems, allowing you to replace these components before they fail.

Proactive **environmental monitoring** allows alerts and errors to be forwarded when environmental thresholds are outside the normal range, or when they are exceeded and would cause damage to the server or to data.

PFA and environmental monitoring are complemented by the **front-panel LEDs** (standard on select Netfinity servers). The LEDs are another means that allows early detection of problems with components or the server, and notification when a process has stopped or a critical file has been changed.

IBM's revolutionary light-path diagnostics (available on selected models) also contribute to this advanced manageability. Netfinity servers were designed with fast problem isolation as a goal, implementing a light-path service panel in conjunction with the component LEDs. Service personnel can quickly and easily identify failing components, potentially without even running diagnostics. And the mechanical design enables extremely easy access to the components via a sliding planar and processor carriage, a design for high availability. And many of the components, such as power supplies, fans and hard disk drives, are redundant and hot-pluggable, so that your system continues to operate normally while you replace the failing component.

To complement the systems management hardware, IBM Netfinity Manager™ software is shipped with every Netfinity server at no additional charge. Based on industry standards, IBM Netfinity Manager complements the hardware by collecting, analyzing, storing and forwarding information from the systems management features discussed above, providing a graphical user interface for easy local and remote access and control as well as integrating seamlessly into higher levels of workgroup or enterprise management tools like Microsoft SMS, Intel LANDesk and Tivoli Management Software.

The Netfinity servers' advanced hardware instrumentation supports the DMI standard. DMI provides hardware component information in a format that permits management applications access to this information. As a result, DMI allows system administrators to monitor many aspects of a system's functionality, so that problems are avoided and users stay productive.

IBM Client Services for Netfinity Manager and Intel's LANDesk Client Manager software, included with all IBM ThinkPad® and Intellistation™ workstations and PCs at no additional charge, also support the DMI standard.

ServerGuide for Hardware Setup and Configuration

The installation and configuration of a server can be a complex, time-consuming task. In addition to installation of hardware, the installation of the operating system, device drivers and applications makes the task more complex. Because of this, some of your highest costs are incurred in the initial installation and configuration of a server. When several servers are being installed, the costs can rise significantly. The solution for IBM Netfinity servers is IBM ServerGuide. ServerGuide's goal is to simplify and shorten installation. This focus on deployment to help you reduce both your total cost of ownership and the complexity that administrators and technical personnel face.

ServerGuide, an important part of Netfinity system management, is shipped with every IBM Netfinity server at no additional charge. It has been updated and expanded to address most configuration and on-site requirements during deployment, installation and setup. ServerGuide's built-in intelligence recognizes machine types and models as well as software versions and other

hardware criteria. As a result, ServerGuide offers installation and configuration choices for your system.

Recognizing that changes are made to BIOS, device drivers and other firmware over time, ServerGuide includes the Update Connector function. Update Connector lets you periodically check the Internet for updates customized for your system's configuration. This is another function designed by IBM to help you reduce the manageability costs associated with servers and keep your system systems operating optimally.

To help administrators, ServerGuide provides tools such as Diskette Factory and Book Factory. Diskette Factory provides a full library of device drivers tested and approved for your IBM server. With a few clicks of a mouse, you can create diagnostic, device driver and many other diskettes for IBM Netfinity servers. Book Factory allows you to view or print documentation about IBM servers, software integration, Netfinity Manager and more. Aside from these tools, ServerGuide also includes a variety of application programs such as Lotus® Domino™, RAID Manager, Cluster System Management and others.

IBM Netfinity System Management Processor

The IBM Netfinity system management processor is the second building block of the Netfinity system management solution. Working with the hardware instrumentation and Netfinity management software, it is key to problem notification and resolution. It provides the system administrator with complete remote management of a system, independent of the server status. The processor is its own administrator and acts as a sentry or guardian for your system, keeping it up and available for your business-critical applications. Whether you are in the office, at home or almost anywhere, you can be confident that if a problem occurs with your IBM Netfinity server, you can be made aware of it and can take action to minimize disruption of your business applications.

You Can Call Your Server

You can dial into the system management processor from a remote Netfinity Manager to perform numerous tasks, even when the system is down to perform numerous tasks. The tasks are described in detail in the IBM Netfinity System Management Processor white paper on our Web page (URLs are included at the end of this paper).

Security features like password protection, user profiles (up to six profiles with the ability to define the level of access rights), log of last login time and dial-back configuration protect the server from unauthorized access.

The Power Stays On, Even When the System Is Off

Because systems management is a full-time job, the system management processor can still do its job even when the power is switched off or when the system has failed. Continuous power is supplied to the processor because the processor is integrated on the system board of selected IBM Netfinity servers.

IBM Netfinity Manager 5.2

IBM Netfinity Manager, the software building block of the IBM Netfinity systems management solution, is a powerful set of tools and utilities designed to manage networked PC-based server, desktop, workstation and mobile systems in the environment you have now, including Windows

NT® 3.51 and 4.0, Microsoft® Windows® 3.1, Windows 95 and OS/2®, operating on both IBM and non-IBM systems. Netfinity Manager supports some of the industry's most popular LAN communications protocols, including NetBIOS, IPX, SNA (LU6.2) and TCP/IP. And, because it supports industry standards such as DMI, SNMP and the Multi-Platform Management (MPM) API, IBM Netfinity Manager 5.2 can integrate with robust enterprise and workgroup management systems from Tivoli, Intel and Microsoft.

IBM Netfinity Manager 5.2 PC administration software can help you manage your networked PCs with ease and efficiency. And most important, it can help you control many of the hidden costs of operation. For example, rather than physically traveling to each LAN-connected system to perform asset management, noting serial numbers and configuration information, the Netfinity Manager auto-discovery feature lets you collect this data remotely—right from your Netfinity Manager system. You can perform capacity planning proactively, knowing in advance which systems will require additional resources, such as memory, larger disk capacity or faster processors. Maintenance scheduling for Netfinity Manager-enabled systems can be automated as well. You can also access and take control of remote Netfinity Manager-enabled systems to identify and resolve problems.

In addition, one of the key features of IBM systems management for servers is the powerful combination of Netfinity Manager Event Scheduler and Wake on LAN™ tools. These tools work together to help lower your computing costs by automating time-consuming, tedious tasks and by performing them at a time that is least disruptive for users.

IBM Client Services for Netfinity Manager

Client Services for Netfinity Manager provides the base function or agent code required for a stand-alone or LAN-connected PC to participate in Netfinity Manager systems management. Client Services for Netfinity Manager support Microsoft Windows 3.1x, Windows 95, Windows for Workgroups, Windows NT, IBM OS/2 and Novell NetWare environments.

Multiprotocol Management

Netfinity Manager can manage multiple network segments running on different protocols by having multiple protocol stacks installed in the management console or by using the Netfinity Manager pass-through management capability.

Pass-through management is the ability of a managing system to access the functions of another managing system on a different LAN segment. The central network manager can access remotely located network managers and perform all of the required functions through the remote managers. The workload can now be split among multiple managing systems and LAN administrators, providing excellent scalability.

To accomplish all of these tasks on a laptop without Netfinity Manager would require a significant investment of time and money to purchase and then integrate an array of software tools. IBM now includes Client Services for Netfinity Manager with IBM ThinkPad, Intellistation workstations and PCs at no additional charge.

Netfinity Manager Web Management

The Netfinity Manager Web Manager, which can be installed as an option on any Netfinity Manager managing system, acts as a mini-Web server. The use of Hypertext Markup Language (HTML) scripts provides a way for Web browsers to access the Netfinity Manager information and commands on the remote Netfinity Manager. A TCP/IP-based Internet or intranet link between the Web browser and the Netfinity Manager with the Web manager installed is all that is needed. Access to all other managed systems is gained in a similar way to the pass-through management described previously—through the Netfinity Manager managing system.

The Netfinity Manager Web Manager capability now lets you manage your networked PCs from virtually any system that can run a Web browser. This lets you take advantage of existing network infrastructures and allows you to manage from the platform of your choice. You don't even need Netfinity Manager code running on your Web management console—so you can manage your network from almost anywhere, at anytime.

IBM Capacity Management

IBM Capacity Management is one of the tools available with Netfinity Manager that complement other enterprise or workgroup managers. Capacity Management collects hardware inventory information, gathered over time from 30 minutes to one year, and displays this data graphically. This lets system administrators easily determine how the servers on their network are performing. Capacity Management can:

- Identify potential bottlenecks before they turn into problems that cost time and money
- Optimize server resource use
- Provide custom graphs and reports of capacity usage data
- Maximize server performance with performance guidelines
- Help you plan future system upgrade requirements needed to prevent network slowdowns before they occur by reviewing past trends of any parameter that you choose (for example CPU utilization, memory, free drive space)

IBM RAID Manager

Integrated into IBM Netfinity Manager, RAID Manager lets you monitor, manage and configure an assortment of RAID adapters and arrays without taking the RAID system offline to perform maintenance. Use RAID Manager to gather data about your system's RAID array and RAID adapter, rebuild failed drives, add or remove physical drives, perform data integrity tests and many 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.

IBM Cluster Systems Management

IBM Cluster Systems Management, a service for Microsoft Cluster Servers, is integrated into IBM Netfinity Manager, but can also integrate smoothly with Intel LANDesk and Microsoft SMS for a clear view of clustered resource components. IBM Netfinity and IBM PC Server products running Microsoft Cluster Server (MCS) will provide additional features that promote ease of use and increased productivity, as well as event and problem notification for a clustered server configuration, all from a single console.

IBM Netfinity Cluster Systems Management allows system administrators to:

- Discover and display individual clusters and, using a GUI, set up and manage those clusters
- Schedule manual load balancing of MCS resources
- Set up and manage alerts from one GUI

Integration with Other Management Solutions

Our systems management solution can be used as a stand-alone, robust, yet cost-effective PC management solution. However, most corporate networks today are growing in size and diversity of systems, as are the number and criticality of the applications running on them. Not only are there multiple systems and protocols, but many customers implement more than one management solution. Our solution provides specific management data to a centralized manager so that it can be incorporated into overall management strategies including Tivoli Management Software, Microsoft SMS and Intel LANDesk. Customers can grow naturally into an overall solution that meets their system management needs while preserving their financial and skill investments.

Tivoli Management Software

Netfinity Manager is a Tivoli-ready product because it tightly integrates with Tivoli Enterprise Management. Integration is provided by a Tivoli Plus module for Netfinity Manager (planned availability date 9/98). This Plus module provides the ability to launch Netfinity Manager from the Tivoli Enterprise Console (TEC), allowing the administrator to use Netfinity Manager functions that complement Tivoli Management Software from the same console. Also, all Netfinity Manager events can be forwarded and integrated with Tivoli. The Plus module also allows the administrator to manage the Netfinity Manager itself with functions such as software distribution of the Netfinity Manager and Client Services for Netfinity Manager code, and monitoring and alerting if critical modules within the Netfinity Manager software have stopped, or failed to start. In addition, the Plus module provides for automated actions in response to alerts received from Netfinity Manager. The Plus module for Netfinity Manager is provided at no cost and can be downloaded from the Netfinity server Web site (planned availability date 9/98).

Microsoft System Management Server (SMS)

Netfinity Manager also integrates with SMS to provide consolidated operations in three areas:

- Inventory data
- Alerts
- Problem determination

Netfinity Manager inventory data can be integrated into the SMS database, thereby enhancing the SMS inventory functions by adding IBM-specific data to its query capability and consolidating the SMS and Netfinity Manager inventory functions.

Netfinity Manager can send any alert to SMS in the form of an SNMP trap. Therefore the system administrator can be notified of potential problems from both SMS and Netfinity Manager on the SMS console.

Netfinity Manager can be launched for a particular system from the SMS topology map, so when an alert is received from a Netfinity Manager system on the SMS console, the administrator can

drill down through the SMS topology map to the problem system, then launch Netfinity Manager on that system to identify and correct the problem—all from within the SMS console.

Intel LANDesk

Netfinity Manager integrates with Intel LANDesk as it does with Microsoft SMS. IBM Netfinity Manager 5.2 offers enhanced integration with LANDesk Server Manager and LANDesk Client Manager Administration in custom inventory extensions, alerts and Netfinity Manager launch support. This integration can provide greater productivity and better usability for the system administrator by consolidating Netfinity Manager desktop and server management tasks with LANDesk into one console, while retaining the benefits of both management strategies.

SNMP

Netfinity Manager now provides more extensive integration with SNMP managers. It generates unique SNMP traps for each Netfinity Manager alert and can forward these traps to any SNMP management platform, such as Hewlett Packard OpenView or Computer Associates Unicenter. Then, the SNMP manager can issue commands to any Netfinity Manager to take an action in response to these alerts through Netfinity Manager's command line interface. Netfinity Manager also ships with MIBs for monitor, inventory and alert data, which is installed on the SNMP management platform, so the SNMP manager can "get" this information whenever it needs it.

Premier Service and Support

At IBM we're continuing to enhance our HelpCenter® and bring many new services to our customers. 90-day IBM Start Up Support provides added value with its 90-day, 24-hour toll-free access (U.S. only) to IBM technical experts who assist customers with network operating systems, configuration options, installation and setup, and diagnostic routines for IBM products as well as ServerProven™ accredited third-party participants. Easy-to-use electronic access to IBM experts is available by phone, fax, bulletin board, commercial on-line services and the Internet. 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. All IBM Netfinity and PC Server systems come with the unmatched service and support of IBM, including a three-year limited warranty with on-site repair. International warranty service is also available. And, customers can purchase extended services at any time during their IBM hardware warranty period.

Conclusion

IBM systems management for servers brings to administrators a complete set of tools that they can use to reduce the total cost of ownership through the effective management, maintenance and optimization of LAN-attached Netfinity servers and clients. These tools work together, in concert, for the best-enabled manageability of server systems today. As a result, the factors that contribute to most network business system failures can be anticipated, assessed and dealt with well before they can become a problem. It is estimated that most organizations spend as much as six times more than the purchase price of their systems in the installation and support of those systems. This is the *total cost of ownership*, which is exactly the cost burden IBM systems management for servers was designed to tackle*.* The powerful tools we offer in the IBM Netfinity systems management solution give you the opportunity to truly *manage* your systems.

The system management processor complements the server hardware instrumentation and network management software to provide system administrators with total remote management

of a system independent of the server status. The processor also supports remote dial-in from an ANSI terminal for administrative tasks if you do not have Netfinity Manager.

The processor can automatically restart the system and alert the administrator in case of problems by dialing out to a pager or a Netfinity Manager through the use of an external modem. This enables the forwarding of alerts and errors so that the administrator can take any necessary corrective action.

Add to this industry-leading management function IBM's unsurpassed service and support, and you have a complete solution for your Netfinity systems. IBM's acclaimed HelpCenter continues to bring new services to our customers, with 2,500 technical experts available at 10 call centers worldwide to help customers with network operating systems, configuration options, installation and setup, and diagnostic routines for IBM products as well as ServerProven accredited third-party participants.

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 7 days a week, 24 hours a day, 365 days a year. 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 directions, products and services, refer to the following white papers, available from our Web site at **www.ibm.com/netfinity**.

Lotus Domino Clusters Overview
Lotus Domino Clusters Installation Primer
Integrating IBM Netfinity Manager with Intel LANDesk Server Manager
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 Ultra2 SCSI Directions
IBM Netfinity Server Quality
At Your Service...Differentiation beyond technology
IBM Netfinity ServerGuide for Netfinity and PC Server Systems

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Printed in the United States of America
7-98

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Warranty Service in those countries where this product is sold by
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