IBM

Netfinity Manager 5.2

Powerful system management tools to help reduce the Total Cost of Ownership

Executive Summary

IBM Netfinity® Manager™ 5.2 is a powerful suite of tools and utilities designed to manage networked IBM and non-IBM PC-based server, desktop, workstation and notebook systems on a variety of platforms, including Microsoft® Windows® 3.1, Windows 95 and Windows NT®, Novell NetWare, SCO UnixWare and IBM OS/2®. Because it supports industry standards such as the Desktop Management Interface (DMI), Simple Network Management Protocol (SNMP), and the Multi-Platform Management (MPM) API, IBM Netfinity Manager 5.2 can also integrate with robust enterprise and workgroup management systems from Tivoli, Intel and Microsoft.

In a recent survey of 753 PC server customers, Netfinity Manager 5.2 was voted the top PC server management tool in all four categories of satisfaction assessed: functionality, ease of use, integration with respondent's enterprise systems management product, and integration with respondent's desktop management product. HP OpenView NNM was the only product to tie with Netfinity Manager in any category, in integration with desktop management product. (Source: Datapro *1998 User Ratings Survey of PC Servers*, January 1999.)

IBM Netfinity Manager 5.2 PC administration software can help you manage your networked PCs with ease and efficiency. And, most importantly, it can help you control many of the hidden costs of operation. For example, instead of 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, learning in advance which systems will require additional resources, such as more memory, larger disk capacity or faster processors. Maintenance scheduling for Netfinity Manager installed systems can be automated as well. You can also access and take control of remote Netfinity Manager installed systems to identify and resolve problems.

This paper discusses the functions of IBM Netfinity Manager and how it can help network system administrators and the end users they support. To help demonstrate of the concepts, we provide some "real-life" examples of Netfinity Manager at work throughout the text. One example shows how Netfinity Manager helps a system administrator recover data from a failed hard disk drive on a server at her place of business and bring the server back online—all without leaving her home. Another shows how a help desk product expert helps a customer with a problem from a remote location. These and other examples demonstrate the many reasons IBM Netfinity Manager 5.2 should be the foundation of your company's system management solution.

Features of IBM Netfinity Manager 5.2

Netfinity Manager provides simple yet comprehensive control of your networked systems to increase system availability and performance while reducing your total cost of ownership. Netfinity Manager provides hardware system management and PC administration across IBM Netfinity, PC, ThinkPad® and IntelliStation™ systems, but also manages your non-IBM PCs. Included as standard with each Netfinity system, Netfinity Manager simplifies remote management with functions including:

- Scheduled asset (hardware and software inventories) management

- Proactive problem notification and tools for problem resolution

- Hardware system component monitors and thresholds to trigger alerts of impending problems

- Powerful alert management with automated actions and/or manual intervention

- Remote help desk and routine maintenance functions such as remote control and file transfer

IBM Netfinity Manager 5.2 Internals

Netfinity Manager minimizes the need for expensive system management hardware. What's more, Netfinity Manager does not require a database or dedicated server to be installed on the network. All that is required is the presence of a physical network and the supported network protocol of your choice.

Netfinity Manager has its own interprocess communication (IPC) system that is used for communication between Netfinity Manager modules and services, locally and remotely over a network. Each Netfinity Manager service has two parts: an executable for the graphical interface and an executable for the base function. Communication between the GUI and base executables is handled by the Netfinity Manager IPC. This makes it simple to run a base function either remotely or locally, and over multiple protocols using the same graphical interface on the managing system.

Netfinity Manager consists of two parts: Netfinity Manager (management console code) and Client Services for Netfinity Manager (agent code). Netfinity Manager is the management code that runs on your LAN administrator's PC or management console. It enables administrators to remotely access and manage LAN-attached systems. Netfinity Manager is installed on a LAN- or serial-attached system that will be used as a management console. Netfinity Manager enhances the local systems management capabilities to enable you to remotely access other LAN-attached systems on which Client Services for Netfinity Manager is installed.

Netfinity Manager supports some of the industry's most popular LAN communication protocols, including NetBIOS, IPX, SNA (LU. 6.2) and TCP/IP. Netfinity Manager supports Microsoft Windows NT and Windows 95. Netfinity Manager can be installed with an optional Web manager that allows the systems to be managed from a supported Web browser.

Client Services for Netfinity Manager is the base code, or agent code, that runs on the server, desktop, professional workstation or notebook systems you want to manage. It enables these systems to participate in Netfinity Manager configurations.

Client Services for Netfinity Manager provides the base function or agent code required for a standalone or LAN-connected PC to participate in Netfinity Manager systems management.

Client Services for Netfinity Manager supports Microsoft Windows 3.1x, Windows 95, Windows for Workgroups, Windows NT, NCD WinCenter Pro, Citrix WinFrame, Novell NetWare, SCO UnixWare and IBM OS/2 environments.

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

Icon	Function Description	Type
	Remote Session provides access to a remote systems command prompt.	Manager
	System Partition Access allows you to update, back up and delete your system partition—all without using your reference diskette (available for IBM systems with built-in system partition).	Services
	Remote System Manager enables you to access and control all Netfinity services installed on remote systems within your network. Systems are organized into logical system groups for simplified management. This icon is also used to represent Netfinity Service Manager.	Manager
	Serial Control enables remote managers to access your system through your modem.	Services
	Web Manager enables the Netfinity Web management feature and provides access security.	Services
	Update Connector Manager allows you to check the Web for updates for all the systems you are managing and to schedule this update to be applied to applicable systems**.**	Manager

Netfinity Manager Web Manager. Web Manager, which can be optionally installed, 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 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 above—through the Netfinity Manager managing system.

The Netfinity 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.

IBM Capacity Manager. Capacity Manager is a service included with Netfinity Manager that is responsible for collecting server performance data and displaying this data graphically in increments from 30 minutes to 1 month. With Capacity Manager, system administrators can easily determine how every server on their network is performing.

Capacity Manager has just been enhanced to include artificial intelligence, making it an indispensable tool for IT administrators. IBM's top performance experts have helped build intelligence into the latest release of Capacity Manager. Now Capacity Manager includes performance analysis and forecasting for hardware components such as CPU and memory to let you know when to upgrade to avoid any performance degradation. Capacity Manager also

identifies and predicts performance bottlenecks and recommends solutions to correct a problem before end users are affected.

Capacity Manager can:

- Identify existing and potential bottlenecks before they turn into problems that cost time and money, and provide recommendations for resolution

- Optimize server resource use

- Provide custom graphs and reports of performance forecasts and capacity usage data

- Maximize server performance with performance guidelines and forecasting

- Help you plan future system upgrade requirements needed to prevent network bottlenecks before they occur by reviewing past trends up to the previous 21 days of data. Parameters include CPU use, memory and free drive space.

For example. . . Netfinity Manager helps to efficiently use your existing resources.
Jane, a system administrator and Tom, an end user, are talking about Tom's need for more memory for an IBM Netfinity 3000 in the engineering department. Jane uses the Capacity Manager function of Netfinity Manager to verify Tom's need. She sees that the performance analysis icon, a "happy face," is frowning, so she knows there is an existing or potential bottleneck. She clicks on this icon and verifies that Tom's suspicions are accurate: There is an existing memory bottleneck. The recommended action to correct this bottleneck is to increase the memory in the Netfinity 5500. Jane also sees that there is a latent bottleneck on the system: When the memory is increased, the CPU will be the next performance bottleneck that will be experienced. Here, Capacity Manager recommends that a second or faster CPU be installed. Because budgets are tight, Jane can't order additional memory immediately, so she uses Capacity Management to read the usage trends of other IBM Netfinity 5500s at the site. Finding a server in another department where usage has been low for the past several months, Jane reallocates the memory to Tom and adds a capital expense note to next year's budget to upgrade Tom's memory and the CPU.

Icon	Function Description	Type
	Software Inventory allows you to create and manage software dictionaries, which can be used to inventory application programs.	Services
	System Profile allows you to customize user and system information into an easy-to-use notebook format.	Services
	System Information detects and reports detailed information on a wide variety of systems.	Services
	System Monitor displays line graphs and real-time monitors for a variety of system resources, and alerts the user or network manager when user-defined thresholds are exceeded.	Services
	Desktop Management Interface (DMI) *Browser* enables you to examine information about the DMI-compliant hardware and software products installed on the system or attached to it.	Services
	Capacity Management collects server performance data and displays it graphically gathered over time from 30 minutes to one month.	Manager
	Cluster Systems Management is integrated into Netfinity Manager to allow the user to view clustered resource components.	Manager

Cluster Systems Management.. Cluster Systems Management—a service for Microsoft Cluster Servers—is integrated into IBM Netfinity Manager 5.2, but can also integrate smoothly with Intel® LANDesk® and Microsoft SMS for a clear view of clustered resource components. IBM Netfinity servers running Microsoft Cluster Server 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 Microsoft Cluster Server resources

- Set up and manage alerts from one GUI

IBM Update Connector Manager. With IBM Update Connector Manager, your system administrator can conveniently verify that systems on the LAN are at the most current level available. Administrators can schedule the service to regularly check the Web for updates to any system they are managing and download device drivers and other system updates, including the latest BIOS levels, over the Internet. Update Connector Manager includes a scheduling function that facilitates system administration by allowing updates to be downloaded to specific systems on the LAN that require the updates. This remote scheduling feature also permits upgrades to occur during off-hours so that your business stays up and running with minimal interruption.

IBM Update Connector Manager allows system administrators to:

- Access and implement the latest supported software with minimal hassle

- Maintain their systems with the latest features and optimal performance

Scheduling tasks. One of the key features of IBM system management for servers is the powerful combination of Netfinity Manager Event Scheduler and Wake on LAN®. These tools work together to help lower your computing costs by automating time-consuming, tedious tasks and by performing those tasks at a time that is the least disruptive to users. Most often, these tasks need to be done after hours or on weekends—times when computers are typically turned off or locked behind office doors. Wake on LAN turns on the networked computers so that Netfinity Manager can perform remote network management, routine maintenance tasks such as file transfer, and hardware and software inventory during these times.

Integration with other management solutions

Netfinity Manager can be used as a standalone, robust, yet cost-effective PC management solution. However, most corporate networks today are growing in size and diversity, as are the number and criticality of the applications running on them. Not only are there multiple systems using multiple protocols, but many customers implement more than one management solution. IBM Netfinity Manager provides integration with workgroup and enterprise managers so that the hardware management functions of Netfinity Manager can be incorporated into overall management strategies including Tivoli Management Software, Microsoft SMS and Intel LANDesk to provide a more robust solution. Netfinity Manager can also interoperate with any SNMP manager such as HP OpenView and CA UniCenter. 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 Netfinity Manager Plus

for Tivoli Enterprise. The Netfinity Manager Plus module has been Tivoli certified at the Premiere level. The Plus Module provides the ability to launch Netfinity Manager from the Tivoli™ Desktop, 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 to and integrated with the Tivoli Enterprise Console™ (TEC). For instance, if a Netfinity 5500 issued a PFA alert that a disk drive in its RAID configuration is about to fail, the alert will appear at the TEC. Then the administrator can launch Netfinity Manager through the Plus Module and use the RAID management service to work on the problem. The Plus Module also allows the administrator to manage the Netfinity Manager application 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 Web site at **www.pc.ibm.com/us/netfinity/smtools.html#3**.

Microsoft System Management Server (SMS). Netfinity Manager also integrates with SMS to provide consolidated operations in three areas:

- 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 in a similar fashion. IBM Netfinity Manager 5.2 offers enhanced integration with LANDesk Server Manager and LANDesk Client Manager Administration in three key areas: custom inventory extensions, alerts and Netfinity Manager launch support. This integration can provide greater productivity and better usability for the systems 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 interoperation 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 HP OpenView or CA UniCenter for consolidated alerting. Then the SNMP manager can issue commands to any Netfinity Manager to take an automated action through a script file 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 are installed on the SNMP management platform, so the SNMP manager can "get" this information whenever it needs it.

Netfinity Extendability

Netfinity Manager has an open design to allow third-party suppliers to integrate their products for a more robust system management solution. American Power Conversion has developed a Netfinity Manager service to monitor their uninterruptible power supplies (UPSs). This interface between Netfinity Manager and PowerChute *plus* Measure-UPS II provides easy-to-read graphical diagnostics for Humidity, Ambient Temperature, UPS Load, UPS Run Time Remaining, Utility Line Voltage, UPS Temperature, Battery Voltage and UPS Battery Capacity.

APC PowerChute *plus* is also shipped at no additional charge on every IBM Netfinity server, with ServerGuide.

Vinca Corporation ships Netfinity Manager with its StandbyServer32 for LAN Server (monitors servers' condition and issues alerts if needed).

For example . . . Sam does it all—remotely! Sam is a systems administrator for a large corporation. He receives an alphanumeric page from a remote site: "Netfinity 5500 in Orlando—operating system watchdog expired—system restarted." Sam ignores the page because he knows that the advanced system management processor will notify him again if the system continues to fail. A few minutes later Sam receives a second page: "Netfinity 5500 in Orlando—POST BIOS watchdog expired—system restarted." Now he goes to his Netfinity Manager console, dials into the Advanced System Management Processor and uses the Remote POST Console to reboot the server and view the POST sequence. He finds out that the POST was not completed because it has detected a memory error that requires manual intervention to correct. So he runs remote diagnostics to determine which memory module failed and, with Remote POST, bypasses the failing module to get the system up and running with reduced memory. He then calls Chris , the local "techie" at the Orlando location, and tells her that he will be sending overnight a replacement memory module required to fix the server. When Chris receives the memory module, she powers off the Netfinity 5500 and removes the cover. She easily identifies the failed memory module because the LED on the module is lit, thanks to the innovative *light-path technology* in the Netfinity 5500. Then she powers the system on and calls Sam to tell him that everything is back to normal. Sam sits back and smiles. He has kept the server up and running even though temporarily in a somewhat suboptimal state. He has also saved his company time and money. First, they did not have to send him on a last-minute costly trip to Orlando to diagnose and fix the problem and, second, the server was down only a few minutes, instead of many hours or days—greatly reducing the amount of money it costs a company when a server is down.

Icon	Function Description	Type
	Alert Manager receives and processes application-generated alerts. You can examine, edit and print reports from the alert log, and customize actions in response to received alerts.	Services
	Predictive Failure Analysis® (PFA) alerts you if one of your PFA-enabled drives is predicted to fail, letting you identify and replace that drive before it becomes a problem.	Services
	Redundant Array of Independent Disks (RAID) Manager lets you view and configure a variety of RAID disk subsystems.	Services
	Process Manager enables you to view detailed information about all processes that are active on a system; you can start or stop a process and generate alerts if a process is started, stops or fails.	Manager
	Error Correcting Code (ECC) Memory setup enables you to control ECC memory features on many IBM personal computers.	Services

System Management at Work

For example . . . the help desk. Jim, a productivity tool expert at the help desk, gets a call from Susan, a new member of the graphics department. Susan is frantic because her department installed a new printer last night and she can't get it to print. She needs a copy of a financial presentation completed for the company vice president in 20 minutes. Jim tells her, "Don't worry. We've installed Netfinity Manager on your workstation. I'll check into the problem. Just wait on the line. I'll take over control of your workstation and see if I can determine why you can't print."

Jim uses the Netfinity Remote Workstation Control to take over Susan's workstation. Of course, for security, Susan first grants Jim permission to control her workstation remotely. Jim learns that Susan has not installed the correct device driver for the new printer. Using File Transfer, Jim copies and installs the correct device driver from his workstation to Susan's system. Next Jim returns to the Remote Workstation Control tool to add the printer correctly to Susan's workstation. Since he has asked Susan to stay on the line, he explains to her the steps he is taking as she watches so the next time her department adds a new printer, she will be able to configure it herself. Jim then sends a sample print job to the new printer to make sure that everything is operating properly. Susan can now finish her job and be confident that she will have it printed within her deadline. And Jim feels good knowing that he has a happy customer. Another mission accomplished.

Icon	Function Description	Type
	Remote Workstation Control enables you to monitor or control the screen, keyboard and mouse of a remote Netfinity system.	Manager
	Power-on Error Detect immediately warns you when a remote system has startup problems, letting you minimize down time.	Manager
	Critical File Monitor warns you whenever it detects that critical system files have been altered or deleted.	Services
	Security Manager helps prevent unauthorized access to your Netfinity services.	Services

For example . . . Netfinity saves the night. Mary, a system administrator, is asleep at home on a Friday night. She is awakened by the sound of her pager. She wonders, "Who could be calling at this time of night?" The pager shows that Netfinity Manager at the office placed the call. It issued an alert because a disk drive on the server failed. The bad news is that the office is at least a 90-minute drive from Mary's home. The good news is that Mary installed a RAID controller in the main server weeks ago. The data on the failed disk can be automatically recovered and written to a spare disk and the night shift can continue working. Mary starts up her PC at home and, with Netfinity Manager Serial Control dial-in support, dials her Netfinity Manager workstation back in the office. Using Netfinity Manager pass-through management capability, she accesses the Remote System Manager on her desktop workstation. From here, she connects to the failing server and accesses the RAID Manager to take the failing drive off-line and allowing the hot spare in the server to automatically take over for the failing drive. In a matter of minutes, Mary brings the server back online. She knows the failed drive won't need to be replaced until Monday morning because the data is recovered and the network load will be light over the weekend. Best of all, thanks to her RAID-enabled server, and IBM Netfinity Manager she avoids a three-hour round trip and can go back to sleep.

Icon	Function Description	Type
	Event Scheduler lets you start and stop key Netfinity services automatically on your system or on remote systems.	Manager
	System Configuration Manager lets you configure a single Netfinity system exactly the way you want to manage it and then copy the configuration to other systems making it easy to administer many Netfinity-enabled systems.	Manager
	File Transfer enables you to easily send, receive or delete files and directories, locally and remotely.	Manager

Conclusion

Netfinity Manager provides comprehensive control of your networked systems to help you improve system availability and performance while reducing your total cost of ownership. A powerful suite of tools and utilities, Netfinity Manager is designed to manage both IBM and non-IBM server, desktop, workstation and notebook systems using many popular operating systems. And because it supports industry standards, IBM Netfinity Manager 5.2 can be incorporated into overall management strategies including Tivoli Management Software, Intel LANDesk and Microsoft SMS. Netfinity Manager can also interoperate with any SNMP manager such as HP OpenView and CA UniCenter. For these reasons, customers can achieve a solution that meets their system needs while preserving their financial and skill investments.

With the ability to identify existing and potential bottlenecks before they turn into problems that cost time and money, and provide recommendations for resolution; optimize server resource use; help plan future system upgrade requirements needed to prevent network slowdowns; discover and display individual clusters and manage them; access and maintain the latest supported software with minimal hassle; schedule tasks at times that are least disruptive to users and allow third-party suppliers to integrate their products for a more robust management solution—these and other examples demonstrate why IBM Netfinity Manager 5.2 should be the basis of your company's system management solution.

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**.

Management

Implementing IBM Netfinity Server Management
Integrating IBM Netfinity Manager with Microsoft System Management Server
Integrating IBM Netfinity Manager with Intel LANDesk Server Manager
IBM Netfinity Advanced Systems Management
IBM ServerGuide for Netfinity and PC Server Systems
IBM Netfinity Systems Management for Servers

Other Topics

IBM Netfinity X-architecture
IBM Netfinity Predictive Failure Analysis
IBM Netfinity Cluster Directions
IBM Netfinity Web Server Accelerator

Lotus Domino Clusters Overview
Lotus Domino Clusters Installation Primer
IBM Netfinity ESCON Adapter
IBM Netfinity Hot-Plug Solutions
IBM Netfinity Storage Management Solutions Using Tape Subsystems
IBM Netfinity Servers and Intel Architecture
IBM Netfinity 8-Way SMP Directions
IBM Netfinity Fibre Channel Directions
IBM Netfinity Server Ultra2 SCSI Directions
IBM Netfinity Server Quality
IBM Netfinity 5500 Server Family
IBM Netfinity 7000 M10 Server
Achieving Remote Access Using Microsoft Virtual Private Networking
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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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