

The best PCs for your business let you concentrate on doing business



IBM PC System Management

Business Solution Brief

IBM believes the best desktop system PCs allow customers to concentrate on their business. Therefore, IBM desktop system PCs are designed for comprehensive manageability, so you can redirect key resources to better meet your primary business objectives. The IBM view of system manageability allows you to take an IBM desktop system PC out of its shipping carton, plug it into a power source, connect its LAN adapter to your compatible network, and walk away. This saves your company time and money so users can be immediately productive.

The IBM view of real business value is simple: We take technically innovative products and package them with superior network management tools, support services and financing options for a higher total benefit of ownership for IBM desktop system PC customers. Total benefit of ownership goes far beyond the traditional measure of direct cost; it derives from features, services and support that drastically reduce management distractions and resource consumption required by an average desktop system network. What else do you need to leverage your technology investment? Read on—you'll realize the benefits of owning an IBM desktop system PC.

What is system management?

Systems management is the deployment, configuration, control and monitoring of the applications, servers and clients in a distributed computing environment. Of particular system management concern is the ability to centrally survey networked desktop system PCs to understand and compile information about their attributes, operating systems, application software, BIOS and other essential operational elements. With such vital information close at hand, updates, corrections, configurations, security and inventory can be centrally managed with minimal help desk or end-user involvement at the desktop level. Remote system management takes much of the cost and complexity out of network management and can improve ease of use, performance, up time, asset management and security.

Properly equipped desktop system PCs monitor their own health, issuing appropriate alerts and to help prevent data loss. Networks equipped with IBM desktop system PCs contain the necessary hardware and software technologies to make managing your networks easier and less resource-intensive. These management technologies facilitate system deployment and maintenance and can result in lower cost per task—thereby increasing the total benefit of owning IBM Desktop System PCs.

What is IBM's perspective on system management?

IBM's system management policy is to lead the industry in delivering state-of-the-art, Wired for Management-compliant PCs built to industry standards that are open, capable and responsive to manageability requirements. Never-ending emphasis is placed on enterprise-wide solutions that address heterogeneous network environments, not just the requirements of a narrow range of PCs that perform specialized functions at the department level. As a result, seamless compatibility and integration with a broad range of operating systems and system management applications like Microsoft® System Management Server, Intel® LANDesk®, Tivoli and CA Unicenter are designed into a variety of IBM solutions.

IBM is constantly improving its hardware technology and expanding and improving its management software product base. Desktop system PCs are critical customer assets, and IBM is committed to delivering solutions that help companies focus their resources on projects that drive the bottom line. IBM offers unparalleled system management capabilities for heterogeneous enterprise environments by including premier system management capabilities in its broad line of desktop system PC products. Whether you choose a desktop or mobile system, workstation or low-end PC, system management capabilities are designed into each unit to allow for enterprise-wide system management. Implementing IBM system management concepts and technologies can allow you to reduce executive management distractions, capitalize on technological advantages, achieve lower cost of ownership, reduce down time and streamline desktop system PC network operations so your focus can remain on running your business and not on managing your network components.

IBM will deliver a unique combination of leadership technologies and system management services integrated into meaningful solutions that can free up IT resources over traditional or competitive offerings. With its dedication to providing as much manageability as possible throughout the life cycle of its products, IBM focuses on the total benefit of ownership, providing extra capability that results in tangible value.

IBM has been working closely with GartnerGroup to develop a new industry standards-based methodology for measuring the total cost of ownership (TCO) for business computing environments. The result of this effort is a comprehensive methodology, available as a software application, TCO Analyst, which will help customers quantify the complexities of their individual IT environments, compare various vendor offerings, and estimate manageability benefits. IBM's participation in TCO Analyst is further proof that we are serious about delivering value, competitive prices and effective solutions so that customers who choose IBM products can devote more time, skills and capital to making their companies more competitive and successful.

IBM also participates in national forums and workgroups charged with the development of standards-based manageability solutions for desktop system PC networks such as the Desktop Management Task Force and the Web-Based Enterprise Management committee, just to name two. Continued support of industry forums, task forces, the IBM/Intel Advanced Manageability Alliance (AMA) and other initiatives keeps IBM at the forefront of manageability developments. By adding its considerable expertise and experience to the picture, IBM helps to accelerate the introduction of system management solutions to a broader base of desktop system PCs by developing, influencing, adopting and adhering to open standards. Simply put, nobody does it better or more completely over such a broad range of computer platforms on an enterprise and workgroup basis.

The Manageability Reference Guide below provides summary descriptions of leading system management products and initiatives, which indicate where desktop system PC system

management technology is headed. As is evident from these data, IBM plays a leading role in developing and introducing system management products and technologies, and actively supports industry initiatives aimed at developing industry-standard system management advancements. IBM desktop system PCs provide these leading-edge industry-standard system management solutions. The combination results in IBM offering a substantial total benefit of ownership with its PC products.

Manageability Reference Guide

Technology, Product and Service Descriptions (in alphabetical order)

The IBM/Intel Advanced Manageability Alliance

In 1996, IBM and Intel announced a broad-based effort called the Advanced Manageability Alliance (AMA) to overcome the hurdles of today's complex computing world with leadership and innovation to build outstanding standards-based solutions to simplify management of systems in a connected environment. Through the AMA, we define, develop, integrate and deliver industry-standard solutions that enable our customers to simplify the installation, configuration and management of their networked PCs. Intel now incorporates IBM Wake on LAN remote management capability into its Fast Ethernet LAN adapters and LANDesk Client Manager software. IBM now incorporates those Intel adapters into its Pentium®-processor-based commercial desktop computers.

As a result of the AMA, IBM customers can now:

- x** use integrated PC diagnostics to reduce service calls and down time
- x** simplify desktop administration and client installation and upgrades
- x** anticipate certain system failures with an alert management system
- x** enable their IT organizations to provide system administration during non-office hours
- x** track PC and network assets
- x** reduce support costs of networked and mobile PCs
- x** lower total cost of ownership for desktop system PCs
- x** increase the strategic value of their networked personal computers

Alert on LAN

Alert on LAN is the latest standards-based solution developed by the IBM/Intel Advanced Manageability Alliance to help you manage and protect your networked computers. Alert on LAN helps you keep your finger on the pulse of every PC in your organization, even when they are powered off. Unplugging a supported PC from the network or its power source, opening its chassis, or removing a component generates an immediate warning and can trigger a rich array of customizable responses. Alert on LAN allows you to respond faster to problems by notifying you of system operating errors and hazardous environmental conditions such as high temperature or low voltage even if the system is unattended. Alert on LAN-enabled systems can be seamlessly integrated into leading network application environments and Alert on LAN has the support of both Intel and IBM as a standard for system notification. (See the Alert on LAN Information Brief for additional information.)

AssetCare by IBM

The IBM AssetCare program for IBM desktop system PCs is a comprehensive offering of system security aimed at detection of system tampering, asset tracking and recovery, and theft deterrence. It consists of a set of offerings focused on system component and data security, rather than a single technology or feature. (See the IBM AssetCare Information Brief for more detailed information.)

Asset ID

Asset ID is an exciting new application of radio-frequency technology that enables you to read and write information to an EEPROM inside an IBM PC using a handheld remote unit. Asset ID can eliminate many of the costly, time-consuming, manual steps involved in today's system deployment processes. Using a handheld radio frequency unit, you can write end-user information and software requirements on a system EEPROM while the PC is still in the carton. Asset ID allows you to take accurate physical inventories of systems and their components without searching for a label or opening the chassis. Simply pass the handheld unit near the box and it can read system information such as model numbers, serial numbers, processor speed and memory, as well as any end-user information you choose to record. When used in conjunction with a compatible radio-frequency security system, security personnel can scan both an employee's badge and an Asset ID-enabled PC to log the system and its contents and to determine if movement is authorized. In effect, Asset ID enhances "electronic property pass" application. (See the Asset ID Information Brief for more information.)

ConfigSafe by Artisoft

ConfigSafe is preinstalled on every IBM desktop system PC. ConfigSafe tracks changes made to critical system files, directories and network settings, which allows a system to be reset to a previous working configuration if a failure occurs. PC administrators and clients can save significant time in data recovery and restoration. (See the ConfigSafe Information Brief for more detailed information.)

Desktop Management Interface

Defined by the Desktop Management Task Force, Desktop Management Interface (DMI) is an industry-standard platform management information framework for business PCs. DMI provides an interface used by instrumentation providers to report hardware and software configuration information to system management applications. IBM extends and integrates DMI functions with Wake on LAN components and IBM system BIOS. IBM has integrated DMI instrumentation with interfaces used by IBM Netfinity Manager, LANClient Control Manager, LANDesk software and a standard DMI browser (which ships with all IBM desktop system PCs) to provide enhanced functionality. DMI is well positioned to provide a standard for Internet-based system management evolution. IBM was a founding member of the Desktop Management Task Force and remains actively involved in new DMI developments. (See the Desktop Management Interface Information Brief for more detailed information.)

IBM LANClient Control Manager

IBM LANClient Control Manager (LCCM) provides a new class of standards-based PC management software with an easy-to-use graphical user interface for Windows NT[®] Server. LCCM is a no-charge offering available for download over the Internet that is licensed for use with IBM clients and can be used to dramatically simplify desktop system deployment, remote setup and configuration, and ongoing lower-level management of networked IBM desktop systems. LCCM

manages the PC and end-user profiles on the server and provides an easy way to configure clusters of IBM PCs.

LCCM takes advantage of features implemented and integrated into supported IBM desktop system PCs so administrators can remotely perform many tasks that previously required their presence at the desktop system PC. LCCM can be used to standardize CMOS settings, flash system BIOS, or even schedule any system to be turned on (using Wake on LAN) so changes can be distributed by network management software during off hours (see System Management Server, below).

LCCM uses preferred push technology whereby the server sends down the software image to a desktop or launches an unattended operating system installation routine at the desktop system PC without any user intervention. IBM is now incorporating an IP-based routable protocol referred to as Dynamic Host Configuration Protocol (DHCP) into LCCM. DHCP is an industry-standard protocol that compliments LCCM's current Remote Program Load (RPL) protocol. DHCP overcomes RPL drawbacks such as its non-routable nature, but takes advantage of its LAN support to minimize WAN traffic. LCCM will support WBEM and will be an MMC-enabled application (see Microsoft Management Console, below). (See the LANClient Control Manager Information Brief for more detailed information.)

Intel LANDesk Client Manager

LANDesk Client Manager (LDCM) is an application that simplifies local and network management of desktop systems. It monitors PC health to give you local and remote alerts, and views of both hardware and software components. In addition, LANDesk Client Manager takes periodic snapshots of critical configuration files for easy configuration management and restoration if needed. An administrator's console enables network managers to unobtrusively view each PC workstation's status. With security set to full access, managers can transfer files and remotely reboot the client workstation as necessary. LANDesk Client Manager is designed to maximize system up time and user productivity. Intel's LANDesk Client Manager is provided with all IBM desktop system PCs.

Intel LANDesk Configuration Manager

LANDesk Configuration Manager (LCM) is an example of one type of local command server. It is a combined hardware/software deployment system that installs administrator-defined standard desktops, including operating systems and applications, across network segments, workgroups or organizations. With LCM, administrators can add new desktop system PCs, modify existing ones and standardize desktop configurations without requiring any hands-on installation of software at each enabled station.

LCM is an Intel-architecture system running Windows NT Server. LCM includes the Intel LANDesk Workgroup Manager (LDWM) Software Distribution, which lets you install software applications and copy files to client workstations. Administrators create desktop configurations in the same Windows environment that will run on the workstation and place them on the LCM. From there, they can be downloaded by authorized staff to desktop system PCs. LCM uses pull technology wherein requests from each desktop must be issued by a user or support person to the LCM server requesting the software image to be downloaded. Administrator-defined LCM menus help users navigate to the correct configuration options. All IBM desktop system PCs support LANDesk Configuration Manager.

Microsoft Management Console

Microsoft Management Console (MMC) provides a management console to network administrators for their Windows 95, Windows 9x and Windows NT 4.0 operating systems. MMC creates a set of integrated tools that will support any protocol and was specifically designed to address the issues of integration, delegation and task orientation. It is an ISV-extensible, general-purpose management display framework for hosting administration tools, built as MMC Snap-Ins by Microsoft and third parties. On its own, MMC is only a 'container' (known as the 'tools host') that provides seamless integration between various Snap-Ins. Snap-Ins are extensions to the host that add management functionality. By using combinations of Microsoft and/or third-party Snap-Ins, customers can create administration consoles tailored to their needs. Non-MMC management programs can run on a computer at the same time as one or more instances of MMC, and use the operating system to switch back and forth.

IBM Netfinity Manager

IBM Netfinity Manager provides an award-winning suite of powerful tools and utilities designed to manage networked servers and desktop system PCs running Windows 95, Windows NT and Novell NetWare and OS/2 operating system environments, on both IBM and non-IBM Intel-processor-based systems. And, because it supports industry standards such as Desktop Management Interface, Simple Network Management Protocol and the Multi-Platform Management API, Netfinity Manager can integrate with robust enterprise-wide and workgroup management systems from software vendors such as Tivoli, Microsoft and Novell.

The Netfinity Manager System Information feature lets you collect serial numbers and configuration information remotely instead of physically traveling to each LAN-connected system to perform asset management. Proactive capacity planning becomes a reality with IBM Netfinity Manager because of its ability to centrally collect information about memory size, disk drive capacity, type of central processor, and the like. Maintenance scheduling for Netfinity Manager-enabled systems can be automated as well, and you can access and take control of remote IBM desktop system PCs and ThinkPads to identify and resolve problems. Netfinity Manager does not require a database or network operating system server to be installed on the network. All that is required is the presence of a physical network and the network protocol of your choice. All IBM PCs ship with IBM Client Services for Netfinity Manager software.

HP OpenView professional suite

The key component of the HP OpenView professional suite is Workgroup Node Manager. It provides a Windows network management tool that creates the framework to access and use management applications, an integrated view of the network, and a single point of management control.

Workgroup Node Manager features include:

- x AutoStart maps the network by polling network devices
- x IP and IPX protocols are managed
- x SmartPolling can set system defaults or customize polling rates by device type
- x Microsoft Internet Explorer is included to monitor and view http: devices
- x OpenView is available to manage DHCP devices
- x Subnet masks can be used to remotely monitor multiple networks

Desktop management tools automate tasks such as hardware and software inventories, software distribution and license metering. Monitoring of network traffic between and among

multiple devices is made possible by HP EASE for a real-time snapshot, or by industry-standard RMON technology to inspect each network packet over time. Remote installation, management and troubleshooting of HP printers are also supported.

PC 97 Hardware Design Guide

PC 97 Hardware Design Guide is a Microsoft document that defines the design guidelines that will allow desktop system PCs to optimize running Windows 95 and Windows NT 4.0 operating systems. More than 200 reviewers representing IBM and nearly 90 other hardware and system manufacturers provided input to version 1.0 of the document. The "Designed for Microsoft Windows and Window NT" logo program was established to ensure that the end user would be purchasing a product optimized to run Windows 95 or Windows NT. PC systems that do not meet the PC 97 minimum requirements are not eligible for the logo. Current IBM workstations, servers and desktop system PCs qualify for the logo program.

The goals for PC 97 are to:

- x encourage ease-of-use innovations on the desktop system PC platform by driving advances to enhance and improve the end-user experience and the quality of desktop system PC hardware and firmware
- x ensure the availability of high-quality hardware that supports advanced features under Windows, ensuring availability of lower-cost PCs that run Windows well
- x allow room for innovation so that manufacturers and designers can pursue new solutions to problems and advance new areas for hardware

PC 98 Hardware Design Guide

The PC 98 Hardware Design Guide advances requirements over PC 97 in a number of areas. The table below briefly summarizes the high-level system changes for Basic PC 98 over the requirements for Basic PC 97, based on the estimated processing demand and processing capability of the lowest-end Intel Pentium processor (or equivalent) by mid-1998. Through AMA, IBM contributes to the PC 98 Hardware Design Guide.

Component	Basic PC 97	Basic PC 98
CPU	120 MHz	200 MHz Pentium Processor with MMX™ technology
L2 Cache	Recommended	256K required
RAM	16MB	32MB
Graphics	800x600x16	Same
ISA	Plug and Play compliant	Slots OK; no devices
PCI	PCI 2.1; Subsystem and Vendor IDs	Same
USB	1 port required	Same
IEEE 1394	Recommended	Same
Device Bay	N/A	Recommended

Self-Monitoring, Analysis and Reporting Technology (S.M.A.R.T.)

S.M.A.R.T. is the industry-standard reliability prediction indicator for both IDE/ATA and SCSI hard disk drives. Self-Monitoring, Analysis and Reporting Technology uses various industry technologies to offer warning of certain predictable hard disk drive failure modes so critical data

can be protected before a failure occurs. IBM is a member of the S.M.A.R.T. committee. (See the Self-Monitoring, Analysis and Reporting Technology Information Brief and Hard Drive Interfaces Information Brief for more detailed information.)

IBM SMART Reaction

IBM SMART Reaction™ is an important new desktop/server application in IBM's suite of system management tools that helps users and network administrators respond quickly and effectively when a S.M.A.R.T. warning is issued. Combined with S.M.A.R.T. hard disks, IBM SMART Reaction can save you time, money and frustration when a S.M.A.R.T. warning indicates that it's time to backup data, replace the hard drive, and then restore the data. SMART Reaction allows the network administrator to perform:

- x automatic emergency system backups in response to S.M.A.R.T. alert
- x continuous backup of mission-critical data files to the server through data mirroring
- x regularly scheduled system backups (attended or unattended during off hours) to ensure that a recent copy of a client's hard disk data is stored if a catastrophic hard disk failure occurs without warning
- x remote restoration of desktop hard disk drive information following repair of the desktop hard disk drive.

See the SMART Reaction Information Brief for more detailed information on the benefits and how SMART Reaction works.

Tivoli TME 10 LAN Access

Tivoli Systems, Inc., developer of Tivoli Management Environment (TME 10), also provides TME 10 LAN Access, the first product to manage disparate workgroup environments from an enterprise level. To prevent isolated workgroups and the resultant duplication of effort and data, along with the manual transfer of data among disconnected groups, TME 10 LAN Access provides ready connectivity and management solutions. It enables customers to manage enterprise desktops directly from the TME 10 console using leading LAN management tools such as IBM Netfinity Manager, Intel LANDesk Management Suite and Microsoft Systems Management Server. Therefore, TME 10 LAN Access preserves the investment customers have in LAN management solutions; takes advantage of existing skills, procedures and resources; and provides a unified enterprise-wide management structure.

IBM Wake on LAN

Wake on LAN is a technology that enables desktop system PCs to be remotely powered-on from a powered-off state. Wake on LAN provides the foundation for centralized system management. Without a technology such as Wake on LAN, remote control of 100% of desktop PCs would be impossible unless someone physically visits each desktop and knows the passwords to perform each function. Thus, Wake on LAN is an enabling technology that is essential for comprehensive remote asset management, inventory management and configuration management functions and, without which other remote tasks would not be possible for a significant portion of desktop system PCs at any given moment.

Wake on LAN-enabled PC power supplies with Wake on LAN-enabled network interface cards stand ready at all times to be powered-on from a remote source that provides an industry-standard magic packet wake-up data frame over the network. IBM desktop system PCs with Wake on LAN can be turned on from an off state because they include Application Specific Integrated Circuit (ASIC) technology. After Wake on LAN powers on networked computers, you use your choice of network management tools to handle remote management operations, e.g.,

Client Services for Netfinity Manager, LCCM, LCM, System Management Server and TME 10. Wake on LAN was introduced by IBM in early 1996 and continues to provide superior system management capabilities. Today, all IBM desktop system PCs ship enabled for Wake on LAN. (See the Wake on LAN Information Brief for more detailed information.)

Web-Based Enterprise Management (WBEM)

WBEM is a collection of technologies designed by a group of companies to facilitate management of an enterprise, independent of vendor, protocol or management standard using Internet and browsing technologies. The key purpose of the WBEM initiative is to consolidate and unify the data provided by existing management technologies. The focus is on solving real enterprise issues by allowing problem areas to be traced from end to end.

At the heart of the WBEM process lie two initiatives:

- x The definition of an extensible, implementation-independent common data description or schema, allowing data from a variety of sources to be described and accessed.
- x The definition of a standard protocol over which this data may be published and accessed, allowing management solutions to be platform independent and physically distributed.

IBM is a member of the WBEM committee and is actively working with Microsoft and others to support this Web-based approach to system management.

Microsoft Systems Management Server

Systems Management Server (SMS) centrally manages Windows NT machines on a network of literally any size, enabling administrators to detect all powered-on PCs in the network, to inventory their software and hardware configurations, and to return key information to a central database that can be queried. (Use of Wake on LAN technology to power-on unattended PC clients makes SMS comprehensive.)

SMS identifies and maintains a central inventory of desktop system PCs and servers after automatically installing its desktop management agent on all desktop machines from a single location. SMS can remotely control screen, keyboard and mouse, execute programs or reboot individual Windows NT-based machines, and examine performance and events. Additionally, electronic software distribution and installation allow the system administrator to perform unattended software installations, using inventory information to properly target machines. Likewise, remote diagnostic tools allow the network administrator to perform remote troubleshooting and problem resolution for networked workstations and servers. SMS Network Monitor agents support password protection, and SMS takes advantage of the built-in security and networking features in Windows NT Server. SMS is a vital part of Microsoft's Zero Administration for Windows Initiative.

Intel Wired for Management

Wired for Management (WfM) is an Intel initiative designed to help manufacturers produce a wide range of business PCs that can be more effectively managed over networks to help reduce total cost of ownership. This initiative helps to distinguish commercial PCs from home PCs. Systems based on the WfM baseline will feature the same network management capabilities detailed by the NetPC Reference Specification from Intel and Microsoft. Customers will be able to use a common set of applications to manage flexible PCs based on the WfM baseline, as well as systems compliant with the NetPC specification. Systems based on the WfM baseline will be more manageable by applications such as Intel LANDesk products, Microsoft SMS, TME

10 and others. IBM fully supports Intel WfM baseline specifications and views it as an extension of the Advanced Manageability Alliance.

Microsoft Zero Administration for Windows Initiative

The Zero Administration for Windows (ZAW) Initiative is a key component of the Microsoft Windows Client Strategy. It refers to a set of core technologies that will give IT professionals new levels of control and manageability over their Windows-based environments by automating such tasks as operating system updates, application installation and providing tools for central administration and desktop system lock down. Users will be able to roam between different PCs without requiring their applications and files to be reinstalled each time. ZAW will also enable application software developers to more easily develop and deploy a wide range of applications.

In particular, ZAW will offer the following:

- x Centralized administration and control of desktop computers, with the ability to lock down desktop configurations
- x Automatic operating system updates and application installations from a central location
- x Side-by-side machine replacement in case of desktop hardware failure
- x Client-side ability to cache data

Microsoft Zero Administration Kit for Windows

The Zero Administration Kit (ZAK) for Windows NT Workstation 4.0 and Windows 95 is a set of tools, methodologies and guidelines for IT managers and computer manufacturers that allows for simplified implementation of a secure, policy-based network environment by incorporating and supplementing existing Windows technologies. The ZAK is designed to better prepare IT managers for the full ZAW capabilities of future Windows releases. IBM is working closely with Microsoft to provide key customer input to ZAK and ZAW initiatives.

For more information

For information via the World Wide Web	www.ibm.com/pc/us/desktop
Information Briefs	www.ibm.com/pc/us/infobrf/index.htm
In Canada	www.ibm.com/pc/ca
For product and dealer location information	1 800 426-7255, ext. 4750
To access the IBM PC Company Bulletin Board	1 919 517-0001
For product information sent directly to your fax machine	1 800 IBM-3395 (1 800 426-3395)
IBM PC Information Directory	Doc# 11018
Total Benefit of Ownership Business Solution Brief	Doc# 14952
Wake on LAN Information Brief	Doc# 14941
ConfigSafe Information Brief	Doc# 14938
LCCM Information Brief	Doc# 14950
AssetCare Information Brief	Doc# 14953
Desktop Management Interface (DMI) Information Brief	Doc# 14962
System Management for Servers Business Solution Brief	Doc# 14967
IBM SystemXtra Business Solution Brief	Doc# 14966
S.M.A.R.T. Information Brief	Doc# 14915
IBM SMART Reaction Information Brief	Doc# 14852
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IBM Personal Systems Group

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