

Accelerating Growth, Accelerating Complexity — Why We Need Manageable PCs

The computer industry is growing, changing shape and changing scope with phenomenal speed and increasing levels of complexity.

Proliferation of PCs, mass production of shrink-wrapped software, geometrical growth in types of computing and data sharing resources — all these converging forces mean that people are generating, receiving and manipulating unprecedented amounts of information and products. And, they want that information delivered faster and better than ever before, with ever more capable — and diversified — PCs as the tool of choice.

The overwhelming majority of business computer users are on the PC platform, with more than 170 million PCs installed around the world. An additional 10 million people are expected to start using PCs this year alone. By the late 1990s, 100 million PC units are expected to ship worldwide each year — more shipments than cars, radios and TVs.

Most significantly, few of these computing resources remain standalone. Information is meaningless unless connected and shared, and the explosion in the growth of networks, including online information networks, home users, small offices and remote connectivity by mobile PC users, stands testament to that compelling trend. Networks, growing at the rate of 10 million new PCs a year, are an indispensable aspect of doing business in the 1990s.

Yet there is a threat to this growth and democratization of computing power: The PC has historically been unmanageable — a black box that needed expert intervention for the user to fully understand and control.

Users of tomorrow's PCs are entitled to — and will demand — a new breed of personal computers. They will demand PCs that work as manageable, cohesive units, systems that can self-configure, self-adjust and communicate with the user. Building the enabling technology for smart, managed PCs and deploying it across the vendor community is the mission and goal of the Desktop Management Task Force — the DMTF.

The Support Burden

Imagine if a person had to call in a technician to plug a new phone into a phone jack, change a TV channel, or drive a new make of car. The situation would be intolerable to many, yet it is what PC users have faced in the past — PCs that were difficult to configure, difficult to service, difficult to even know what software and hardware resources it had or how to modify them. With new PC capabilities emerging rapidly, including multimedia and remote networking, the task of the average user becomes even more daunting.

Numerous industry studies have shown that the majority of PC users do not fully understand their systems, and must rely on experts to configure and control them. For example, as many as 50 percent of support calls to vendors are related to installation and configuration of devices. In networked environments, managing the system accounts for 70 percent of client/server costs. (Source: Gartner Group).

The support situation is exacerbated as the computer moves into the home. Only two years ago, according to major PC vendors, most support calls were placed by computer experts needing help with complex or specialized technical problems. Now PC makers say as many as 70 percent of calls come from computer novices, especially as new multimedia computers gain mass appeal and enter the home. For the average user, many ordinary PC management functions remain elusive and difficult to understand.

Driven by such industry trends, the need for managing information, computing resources and networked systems has never been greater. Without solutions that are reliable, sophisticated, interoperable and easy to use, the industry is hobbled. Management is critical for the next generation of computing to emerge.

The Nature of the PC

When the PC was designed, no architecture was established for uniformly identifying, installing, or integrating hardware and software into the platform. As a result, the PC is inherently non-proprietary, open and flexible. In standalone situations, this lack of uniformity has made it difficult for many average users to truly understand, configure and control their systems. In the distributed environment of client/server networks, the PC's openness brought distributed complexity as its legacy.

At the corporate level, network administrators have found it nearly impossible to manage PC assets or easily configure or troubleshoot systems, especially remotely. It is difficult to even know what software and hardware resides on a given system. For the average standalone user — the small office, home office or simply home recreation markets — configuring a system, adding cards, installing software or using a modem can be intimidating tasks calling either for expert help or yet another call to overburdened vendor support lines.

Different Markets, Unifying Management Needs

PC technology is poised to enter new markets as we witness the convergence of telecommunications, “edutainment” and online information services. What once was the privilege of an electronic elite has now moved into virtually every work place and is rapidly making inroads into non-business environments. In fact, the market with the greatest potential for new growth promises to be the home, representing at least 30 to 40 percent of new PCs purchases (Mercury Research, Scottsdale, Ariz.). Other growing markets include education, consumer and mobile applications.

Despite the PC’s different environments, the need for management remains consistent. In the mobile market, management issues incorporate the requirements of both networked and standalone PCs, melded with the unique characteristics of mobile computing. For example, users want automatic configuration of occasionally connected and unconnected PCs, authentication and security, remote file synchronization, performance monitoring and easy remote troubleshooting.

In the small office or home office, ease of setup, lowered support burdens and remote access solutions that are efficient, easy and quick are prevailing needs. Such users also want PC systems that are easy to upgrade and expand, without calling in the experts. Self-managed PC systems, and enhanced user control and understanding of the PC, are compelling issues in the home and small office if PCs are to become ubiquitous information appliances.

In the corporate IS market, networked systems management currently lacks common, comprehensive access to PCs, PC products and peripherals. These environments will require a way to integrate desktop level information, such as resources and configuration, into the network infrastructure. Key issues include remote control and centralized management, support, asset management and help desk support. Desktop management means making PCs full citizens of the network.

Bringing Order Out of Chaos

The Desktop Management Task Force's Desktop Management Interface (DMI) is a step toward bringing order out of this chaos. The DMI allows desktop computers, hardware and software products, and peripherals — whether they are standalone systems or linked into networks — to be manageable and intelligent. It allows them to communicate their system resource requirements and to coexist in a manageable PC system.

For vendors, the DMI technology adds ease of use, intelligence, management and interoperability to hardware, software and peripheral products that implement it. For users, the DMI offers a number of benefits: systems and software that are simple and easy to use, plug-and-play installation and real-time system diagnostics and support.

For the industry as a whole, the DMI provides a flexible and sophisticated way to manage systems and products throughout the inherently open PC landscape. The result will be an invigorated industry and a seedbed for the next generation of computing products.

The DMI Architecture

The DMI architecture includes the Service Layer, a local program that collects information from products, manages that information in the Management Information Format (MIF) database, and passes the information to management applications as requested. It controls communication between itself and management applications by means of the Management Interface (MI), and between itself and manageable products by means of the Component Interface (CI).

The MI allows DMI-enabled applications to access, manage and control desktop systems, components and peripherals.

The CI allows components to be seen and managed by numerous applications that call the DMI. It also shields component vendors from decisions about management applications, protocols and operating systems, and allows them to focus on providing competitive management for their products.

MIFs define the standard manageable attributes of PC products in categories including PC systems, servers, printers, LAN adapters, modems and software applications. The DMI's Service Layer manages the information in the MIF database, derived from MIF files provided with each manageable product.

The DMI and Plug'n'Play

Standards such as Plug'n'Play are one aspect of automating and simplifying how PCs are used, one that focuses on the physical attributes of components, primarily add-in cards and the installation/configuration of hardware. Plug'n'Play addresses these issues on PC platforms under the Windows environment.

Plug'n'Play is synergistic with the DMTF's efforts to make desktop computing easier and more manageable for LAN administrators and PC users alike. The DMI supports Plug'n'Play by mapping Plug'n'Play information into the standard PC systems MIF recently defined by the PC Systems Working Committee.

The DMI enables manageability by allowing DMI-calling applications to access MIF information, providing the opportunity for the development of new kinds of powerful management software. The DMI is independent of operating system and processor, enabling the development of manageable PC products and applications across platforms.

The DMI and SNMP

The DMI is complementary to existing network management standards, such as SNMP (Simple Network Management Protocol), which already have considerable mind share and a large installed base. DMI maps to SNMP-based consoles to access the desktop in a uniform manner.

Both can work together as an integrated, cohesive solution to deliver information to the LAN administrator, and also to help individual users provide accurate diagnostic information to remote technicians and support lines about what's going on at the desktop level. The antithesis of a closed API, the DMI was designed from the foundation up as an "Esperanto" of PC management – a common ground between protocol-level management and the PC.

History of the DMTF

The DMTF is an industry-wide consortium committed to making PCs easier to use, understand, configure and manage. The DMTF's goal is to provide the PC platform with a flexible management paradigm and the ingredient technology to meet the information demands of today's — and tomorrow's — computing environment.

In the past two years, the DMTF has made impressive progress toward that goal. Transcending historically vigorous competitiveness among PC industry participants, the DMTF has remained on course with its vision of a new generation of manageable PCs. The DMTF's

accomplishments represent the work of more than 350 hardware and software vendors, including leading companies in the PC industry.

In October 1993, less than two years after its founding, the DMTF delivered a developers' release of the Desktop Management Interface (DMI). The DMI was the industry's first OS-independent and protocol-independent API for managing the personal computer.

Only six months later, in April 1994, the final DMI specification was made available to the industry. By July 1994, the industry's first standard MIF was delivered by the DMTF's PC Systems Working Committee — a crucial first step in determining what defines a PC system, how it can identify itself to management software, and how it can become a self-managing system for every user to understand and exploit to its optimal power.

By September 1994, a DMI SDK will be shipped, as well as MIF guidelines for vendors interested in developing MIFs for their own products. Final MIFs for LAN adapters and printers are expected soon, and work is also underway to define standard MIFs for servers, software applications, mass storage devices and modems.

Developing to the DMI gives vendors the opportunity to differentiate and add value to their products. The DMI enables them to accentuate both standard and vendor-specific features in their products and supports existing standards, such as the SNMP and Plug 'n' Play.

For the average PC user at home and at work, as well as for the PC specialist, DMI-enabled PC products will usher in a new model of PC understanding and support, a model which gives users the ability to discover what is happening inside the PC and *control* it. This new relationship between user and PC will be an imperative for growth as computing and communications spiral into a single tool for users.

Industry Cooperation at Work

The DMTF is a unique cooperative venture. With customer demand as the catalyst, several leading vendors in the computing industry began conducting informal meetings on the issues of desktop management in early 1992. Gathering at the Interop 92 Spring trade show, they developed a cooperative strategy for managing desktop systems. The original vendors (Intel Corp., Microsoft Corp., Novell Inc., SunSoft and SynOptics Communications Inc.), were quickly joined by Hewlett-Packard, IBM and Digital Equipment Corp. to form the Desktop Management Task Force.

During 1992 and 1993, the DMTF began developing the DMI and enrolling broad industry representation in the development of MIFs for the products and peripherals of PC systems.

In 1994, the DMTF broadened its membership structure to provide vendors with new opportunities for influencing the DMTF's work. Business and technical direction is currently being provided by the DMTF's Steering Committee: Apple Computer Inc., AST Research, Compaq Computer Corp., Dell Computer Corp., Digital Equipment Corp., Hewlett-Packard Company, IBM Corp., Intel Corp., Microsoft Corp., Novell Inc., SunSoft (a Sun Microsystems Inc. business), Symantec Corp. and SynOptics Communications Inc.

Much of the early success with DMI implementation has been made possible by the cooperative efforts of several multi-vendor Working Committees seeking to define standard manageable attributes for their products — culminating in MIF specifications — that could be accessed via the DMI.

DMTF Working Committees continue this commitment to defining components, groups and attributes for PC systems, with the goal of making PCs self-configuring and identifiable to a wide range of management applications. Other Working Committees include:

LAN Adapters

Accton, Asante, DCA, D-Link, Eagle Technology, IBM, Intel, Proteon, SMC and 3Com.

Modems

Hayes, Intel, Telebit and UDS/Motorola.

Printers

Adobe Systems Inc., Hewlett-Packard Corp., IBM-Pennant Systems, Intel Corp., Lexmark, Microsoft Corp., Okidata, QMS, Tektronix, Texas Instruments, Unisys and Xerox.

Servers

AST Research, AT&T, Compaq Computer Corp., Dell Computer Corp., Digital Equipment Corp., Gateway 2000, Hewlett-Packard Company, IBM Corp., Intel Corp., NEC, Novell Inc., TriCord and Tulip Computers.

Software Applications

AST Research, Intel Corp., McAfee Assoc., Microsoft Corp., Novell Inc., WordPerfect.

PC Systems

AST Research, AT&T, Compaq Computer Corp., Dell Computer Corp., Digital Equipment Corp., Gateway 2000, Hewlett-Packard Company, IBM Corp., Intel Corp., Magee, Microsoft Corp., NEC, NetLabs, Novell Inc., Olivetti, Palm Associates, Phoenix Technologies, Reliability Systems Inc., SunSoft, Tally Systems, and Tulip Computers.

The DMTF is encouraging other vendors to form Working Committees and begin developing standard MIFs for their specific product categories.

The DMI at Work: Making Manageability A Reality

The DMI has garnered strong support from numerous vendors and corporate users who support the DMTF's continuing effort of proliferating the DMI standard in all computing environments. The DMI promises an open standard, which will guarantee vendors a common strategy for designing supportability and manageability into their products. For users, the DMI promises ease-of-use and inherent intelligence in their computing environments.

Deploying the DMI will have very concrete benefits, initially at the enterprise level but just as surely across all computing environments, including the home and small office, home "edutainment" use, and mobile.

Following are several clear examples of DMI-based solutions in action. For example, a user may want to connect to a workstation via modem but has no way of knowing the modem's communication parameters. A modem using the DMI would report all of its current communication parameters to the MIF database. Rather than walking to the modem, the user can access this information from the desktop by querying the MIF database stored on the network. The user quickly discovers the modem is running at 9600 baud with 8 data, no parity, and 1 stop bit, which allows a connection to begin.

Or, a systems administrator wants to install a new software program on a user's PC. Again, the administrator can query the DMI's MIF database and quickly determine if the user's desktop has the minimum system resources and configuration to load the program.

Support becomes easier, even long distance. Imagine a user who is having trouble configuring a network adapter. A call to the manufacturer's support line is greatly simplified when the user can access the MIF database for the network adapter in question. Using this selective data along with the PC systems configuration data in the MIF database, the manufacturer quickly determines the cause of the problem and provides a solution — without the time-consuming guesswork frequently needed now.

With full DMI deployment, the entire PC industry, from the enterprise to the desktop, will enjoy unprecedented ease of use and manageability in the next generation of PC systems and products.

THE DESKTOP MANAGEMENT INTERFACE (DMI)
*ENABLING THE NEXT GENERATION OF DESKTOP PC
SYSTEMS*

DESKTOP MANAGEMENT TASK FORCE (DMTF)

