

Questions and Answers About Windows 95

Microsoft is continually enhancing the Microsoft Windows product line to deliver easy-to-use yet powerful operating systems that exploit the latest advancements in microcomputer hardware technology. Windows 95 has sparked a great deal of interest and speculation. It is the official name of the Windows “Chicago” project, which is the technology-development effort that will deliver the next major release of Windows for the mainstream desktop and portable PC. The purpose of this chapter is to answer the questions customers have asked most often about Windows 95.

Note: The list of questions and answers about Windows 95 is updated on an as-needed basis. To obtain the latest list, connect to an online information service and access the Microsoft WinNews information forum. See the end of this chapter for more information about where to find Microsoft WinNews information.

What Is Windows 95?

- **What is Windows 95? Why change from the name Windows “Chicago” to Windows 95?**

Windows 95 is the official product name of the next major version of Microsoft Windows. Windows “Chicago” was the code name for the development project to produce the successor to Windows 3.x and Windows[®] for Workgroups 3.x, and this name was used until the official product name was decided and announced.

- **What are the key benefits and features of Windows 95? What features will Windows 95 not have?**

Windows 95 will present a major step forward in functionality on desktop and portable PC platforms by providing a system that is even easier, faster and more powerful to use, and which maintains compatibility with the Windows- and MS-DOS[®] operating system-based applications and hardware peripherals in which customers have invested.

Ease of use will be improved through the Plug and Play architecture and a more intuitive user interface. With the introduction of the Windows 95 operating system, the engine of Microsoft Windows is being revamped to improve performance and provide smooth multitasking. Windows 95 will be a complete, integrated 32-bit operating system that does not require MS-DOS, although it can run MS-DOS-based applications. It implements the Win32[®] API and provides pre-emptive multitasking and multiple threads of execution for 32-bit applications.

Windows 95 will include reliable and open networking support and high performance, as well as messaging and dial-up network access services.

As the successor to Windows 3.x and Windows for Workgroups 3.x, Windows 95 will meet a number of key requirements. First, Windows 95 will be compatible with applications and device drivers for both MS-DOS and Windows. When a customer upgrades to Windows 95, performance will meet or exceed performance of Windows 3.1, as long as the customer has an 80386DX or higher system with at least 4 MB of RAM. For systems with more than 4 MB of memory, performance will be improved over Windows 3.1. The transition to the new user interface will be easy for current users of Windows, and companies that want to make the transition at their own pace will still be able to run Program Manager and File Manager during the transition period.

Windows 95 will not be processor-independent nor will it support symmetric multiprocessing systems. Windows 95 is also not designed to meet C2-level security specifications. If these features are important to a customer, Windows NT™ is the right operating system to use.

■ **What will be the hardware requirements for Windows 95?**

Windows 95 will run on Intel (or compatible) 80386DX or higher processors with a minimum of 4MB of memory (8MB recommended). A VGA-compatible video adapter is also required. Windows 95 is expected to use approximately 10-15 MB additional hard disk space as a typical upgrade from Windows 3.x or Windows for Workgroups 3.x, and MS-DOS.

■ **How does Windows 95 compare to the Windows 3.1, Windows for Workgroups and Windows NT operating systems?**

Windows 95 is designed to make mainstream PCs easier and more powerful. It will be the right choice for customers who want to run business and personal-productivity applications and for use on home computers. Windows NT is designed for the most demanding business uses such as development or advanced engineering and financial applications. Windows NT is the right choice for customers who need the highest level of protection for their data and applications. Windows NT is also the right choice for those who need scalability to multiprocessing and RISC systems.

■ **Why is Microsoft changing the numbering system for Windows?**

Until recently, version numbers have served us well. Version numbers helped inform customers that new versions were available and gave some sense for the significance of the improvements. However, our customer base has broadened to include less technical users, and our research indicates that even our most sophisticated customers find our current version-numbering scheme confusing. For example, Windows 3.1 provided far more new capabilities than a typical 0.1 release, and Windows for Workgroups 3.11 introduced dramatically more than the usual .01 release. We must make it easier for customers to understand which version of our software they are using, so they know when to consider upgrading to the next release.

- **Does this numbering system mean Microsoft will release a new version of Windows every year?**

No. It means that the version numbers will help give users a sense for the “model year” of their software, in the same way that customers have a sense of the model year of their cars today.

Why Will I Want Windows 95?

- **Why will individual customers want to upgrade to Windows 95?**

The sheer quantity of the improvements included in Windows 95 represents a great value for customers. Top on the list of requested improvements was an easier way to work with the PC. As a result, a **new user interface** was designed in Windows 95 that will help make computing even easier for both less experienced users and experienced users who want greater efficiency and flexibility.

Long file name support is one of many usability improvements in Windows 95. Improving ease of use goes beyond fixing problems with Windows — it encompasses the hardware, applications and network as well. **Plug and Play** will make hardware setup automatic, and **built-in networking** will make starting a new network or connecting to an existing network server such as Novell[®] NetWare[®] and Windows NT Server just as easy.

Customers also want greater efficiency and power and to get their work done faster. They want to run more than one application or task at the same time. They want to use their computers to access files, electronic mail, and public-information networks from any location — at work, at home, or on the road. They also want better multimedia, whether for playing MS-DOS-based games or for teleconferencing using TV-quality video resolution. The following are highlights of capabilities in Windows 95 that address these requests:

- **Pre-emptive multitasking.** Windows 95 can perform multitasking smoothly and responsively for 32-bit applications.
- **Scalable performance.** The performance improvements that Windows 95 provides over Windows 3.1 increase as the amount of RAM increase, due to the high-performance 32-bit architecture of Windows 95.
- **Support for 32-bit applications.** Windows 95 supports the Win32 API, which means customers can look forward to a new generation of easier, faster and more reliable applications.
- **Increased reliability.** Windows 95 increases protection for running existing MS-DOS- and Windows-based applications and provides the highest level of protection for new 32-bit applications for Windows. As a result, an errant application will be much less likely to disable other applications or the system.
- **Faster printing.** Windows 95 features a new 32-bit printing subsystem that reduces the time spent waiting for print jobs to finish and improves system response when jobs are printing in the background.
- **Better multimedia support.** Just as Windows 3.1 made sound a part of the system, Windows 95 now includes support for video playback. The video system and CD-ROM file system will provide high-quality output for multimedia applications.

- **More memory for MS-DOS-based applications.** Windows 95's use of protected-mode drivers means customers will have more than 600K free conventional memory in each MS-DOS session, even when they are connected to the network and using a CD-ROM drive and a mouse.
- **Microsoft Exchange client.** Windows 95 includes the Microsoft Exchange client, a universal client that retrieves messages into one universal inbox from many kinds of systems, including Microsoft Mail, faxes, Internet Mail, The Microsoft Network, CompuServe[®] Mail, and so on.

■ Why will companies want to upgrade to Windows 95?

Companies will want to move to Windows 95 because it will help reduce their PC support burden, help increase their control over the desktop, and help increase the productivity of their end users. Numerous studies have shown that as much as 80 percent of the cost of owning a PC over the long term are the costs associated with support, including installing, configuring and managing the PC, and training the PC user. The Gartner Group has concluded that

Windows 95 will likely lead to significantly lower total cost of ownership compared to MS-DOS and Windows 3.1 (PC Research Note: Personal Computing Costs: A Windows 95 Model, Aug. 15, 1994). Their model estimates the support savings will be \$1,180 per user per year. Over the five-year ownership period assumed in the analysis, this translates into savings of nearly \$6,000 per user.

Windows 95 includes numerous features designed to reduce the costs of supporting PCs and PC users, including the following:

- **A simpler, more intuitive user interface that can reduce training requirements for novice users and enable experienced users to learn new tasks with less help.** The start button, taskbar, Windows Explorer, wizards, a new help system and more will make Windows 95 easy to learn and make functionality easy to discover.
- **Built-in networking support that is easier to set up and configure and is faster and more reliable to use.** Whether you're running NetWare or Microsoft networks using NetBEUI, IPX/SPX or TCP/IP protocols, and using NDIS or ODI drivers, Windows 95 has integrated support for your network client, protocol and driver. Additional networks are added easily. Windows 95 includes 32-bit clients for both NetWare and Microsoft networks that are fast, reliable, and require no conventional memory. A Windows 95-based PC can have multiple network clients and transport protocols running simultaneously for connecting heterogeneous systems.
- **Plug and Play device installation to automate the difficult process of adding devices to a PC.** Windows 95 supports the industry-standard Plug and Play specification to enable automatic installation and configuration of add-on devices. If you install Windows 95 on the system you have today and purchase a Plug and Play add-on device, you will be able to install that device by just plugging it in and turning on your system. Plug and Play takes care of the messy details of installation and configuration. Plug and Play also enables innovative new system designs that support such capabilities as hot docking and undocking.
- **System-management capabilities that will simplify remote administration and enable new system-management applications.** Windows 95 features an infrastructure for the management of PCs that leverages a hierarchical database of system-configuration

information, called the Registry. The Registry holds all the pertinent information about the system — hardware, software, user preferences and privileges — and provides access to its contents over the network through a variety of industry-standard interfaces, including SNMP, DMI, and Remote Procedure Call. This infrastructure will simplify many administrative tasks by including tools for remote configuration of the desktop and will lead to a new generation of sophisticated system-management applications for managing the desktop, performing hardware and software inventorying, and supporting software distribution.

- **System policies that enable an administrator to control a desktop configuration.** Windows 95 supports policies, which are settings an administrator configures to define the operations users can access on their PCs. Policies also can be used to define the appearance of the desktop. For example, the administrator can set a policy to disable the MS-DOS prompt and the “Run” commands, to prevent users from arbitrarily running applications.
- **Support for roving users.** Windows 95 can present different configurations, depending on who has logged into the PC. This option allows users to log into different machines on the network and see their personal configurations.
- **Built-in agents for automating backup of desktop systems.** Windows 95 includes the software required to backup a desktop system using a server-based backup system. The backup agents included with Windows 95 work with the most popular server-based systems.

In addition to reducing support costs and increasing control over the desktop, Windows 95 will help make end users more productive. In usability-test studies, users of Windows 3.1 are able to perform a series of typical tasks that they perform today in 25 percent less time using Windows 95. These tests did not take into account many of the tasks that users would like to perform but which are too difficult today, such as installing a CD-ROM drive and sound card or retrieving a file from the desktop system while using the computer at home or traveling on business. By making these capabilities much more accessible, Windows 95 will enable customers to be even more productive using PCs.

■ **Won't it be expensive to put Windows 95 on all the PCs in a company?**

Windows 95 has been designed to provide a safe and smooth transition to the new operating system. Windows 95 will work on the hardware and software you already have through support for existing device drivers and applications for MS-DOS and Windows. On mainstream systems — those with at least 4 MB of RAM and an 80386DX processor — Windows 95 will perform as fast or faster than Windows 3.1 if all you do is upgrade the operating system. The installation program will detect and maintain current system settings and enable automated installation through a variety of techniques, including login scripts and software-distribution applications. Users of Windows 3.1 will be productive quickly, as confirmed by the thorough usability testing Microsoft conducted with users of Windows 3.1 and the learning aids that will be included with the product. After a 15-minute “play period” and with the help of a computer-based tutorial, users of Windows 3.1 participating in tests have been found to be as productive using Windows 95 as they are using Windows 3.1 the first time they perform a set of typical tasks. By the time it is commercially available, Windows 95 will have been subjected to hundreds of thousands of hours of rigorous internal testing and will have undergone the most extensive beta testing in history.

The savings achieved by using Windows 95 will outweigh the costs of making the migration. The Gartner Group has estimated that migration costs can be recouped in three to six months. Good planning and deployment techniques can help keep these costs to a minimum.

- **Given the recent delays in the availability date, should companies delay their efforts to evaluate, test, and deploy Windows 95?**

Not at all. The delay actually gives corporations a good opportunity to begin their planning now, as the Windows Preview Program will make Windows 95 beta 3 available during or shortly after the first quarter of 1995. Microsoft is working hard to provide tools and assistance for corporations to do thorough migration planning—these tools include TrainCast, where a series of free training programs covering Windows 95 migration will be broadcast to VARs, support professionals, corporate helpdesk personnel, OEMs, Authorized Training Education Centers and others interested in in-depth training; and the Windows 95 Resource Kit, which is the essential source of technical information and tools for MIS managers and network administrators. Thorough advance planning can save time and money as indicated in a recent Gartner Group migration analysis. The Gartner Group believes the cost of migrating to Windows 95 can be as low as \$200 per desktop by carefully planning how to train end users and support staff, how to automate the actual deployment and how to take advantage of the new capabilities built-in to Windows 95. The best starting point for IS managers interested in learning more is to attend the upcoming Windows 95 TrainCast. Call 1-800-597-3300 for more details on TrainCast.

Availability and Packaging Plans

- **When will Windows 95 be available?**

Windows 95 is scheduled to ship in August 1995. Microsoft's commitment is to ship a great product. The intense testing period that the product is going through will help ensure a great release based on feedback from tens of thousands of beta testers. A mainstream operating system product must install smoothly and compatibility must be there. With tens of millions of potential upgraders, the complexity of assuring this is enormous. Why did we delay the release until August? Every constituent we have talked with has said that whatever we do we shouldn't ship too soon, so we're taking the extra time we believe we need to get it right.

- **What different packages will you have for Windows 95?**

Packaging decisions will be made in the final stages of the development cycle.

- **I understand there is a new logo for Windows 95. What will it mean to me?**

The new logo, which looks quite similar to the current logo, featuring the same Windows flag, will be used optionally by vendors to identify their hardware, software and peripheral products that take advantage of new capabilities in Windows 95. The logo will let customers know at a glance, for example, which CD-ROM drives are Plug and Play-enabled and which applications are 32-bit.

Vendors can obtain detailed logo requirements by accessing the Microsoft Developer Solutions Phone-Fax service at (206) 635-2222 and requesting document 130.

■ **I hear rumors that Microsoft is working on versions of Windows 95 for non-Intel microprocessors. Is this true?**

No, Microsoft is not working on versions of Windows 95 for non-Intel[®] microprocessors. Windows NT is Microsoft's portable operating system, and it's already available on high-end Intel, MIPS[®], Alpha AXP[™], PowerPC[™] and Clipper[™] computers.

■ **What will happen to MS-DOS?**

Microsoft will continue to enhance MS-DOS as long as customers require it. Future versions will be derived from the protected-mode technology developed in the Windows 95 project.

■ **Will MS-DOS 6.22, Windows 3.11, and Windows for Workgroups 3.11 still be available when Windows 95 ships?**

Yes. These products will still be available from the same channels you presently obtain them from. We will continue to make these products available as customer demand dictates.

User Interface

■ **How will the new user interface in Windows 95 make the PC easier to use?**

The goal for the user interface for future versions of Windows is to make computers easy for all people to use. The user-interface design in Windows 95 will achieve these goals through the most extensive usability-testing effort ever (thousands of hours of laboratory testing, with hundreds of users of all levels of experience) and through feedback from various sources, including testing at customer sites, reviews with experts on training in Windows, audits by user-interface consultants, feedback from focus groups, and analysis of product-support calls.

We expect both inexperienced and experienced users will find that the changes being made to the user interface in Windows 95 make it even easier to learn and use. The system taskbar will make all the functions most users need accessible with a single click of a button. The taskbar will show all open windows and will make it much easier to switch between windows by just clicking on a button representing that window. Instead of mastering different kinds of tools (Program Manager, File Manager, Print Manager and Control Panel) to work with different resources on their computers, users of Windows 95 will be able to browse for and access all resources in a consistent fashion with a single tool. All resources in the system will have property sheets, which present tabbed-notebook-style interface settings that can be directly changed; a new integrated Help system makes it easy and fast to get help at all times.

- **Won't a new user interface mean a lot of retraining for current users of Windows?**

The Windows 95 user interface is designed to make experienced users of Windows 3.x productive immediately, and usability testing has found this to be the case. After a few iterations of working with the Windows 95 environment, users of Windows 3.1 are able to complete common tasks faster with Windows 95. With subtle refinements in the user interface and the addition of migration training aids during the continued testing process, productivity can be expected to improve even more.

Windows 95 will enable corporate customers and individuals who want to move gradually to the new user interface to continue running Program Manager and File Manager while they become familiar with the new user-interface features.

Architecture

- **Your performance goals sound very ambitious, considering all the functionality you're adding to Windows 95. How will you achieve those goals?**

The stated performance goal of Windows 95 is that when a customer upgrades to Windows 95, performance will meet or exceed performance of Windows 3.1, as long as the customer has an 80386DX or higher system with at least 4 MB of RAM. (For systems with more memory, performance will be improved over Windows 3.1.) Windows 95 will meet this performance goal by implementing new technologies to better optimize the use of memory on low-end system configurations. The networking, disk, CD-ROM and paging caches will be fully integrated to scale better as more memory is added to the system. Protected-mode device drivers will be dynamically loadable to ensure that only the drivers that are immediately needed are consuming memory. Great attention will be paid to effective tuning, including hand-tuning source code.

- **I've heard Windows 95 described as a 32-bit operating system, yet I've also heard that portions of Windows 95 are implemented with 16-bit code. Are both these statements correct?**

Windows 95 is a 32-bit, pre-emptive multitasking operating system that implements some 16-bit code to provide compatibility with existing applications. Windows 95 deploys 32-bit code wherever it significantly improves performance without sacrificing compatibility. It retains existing 16-bit code where it is required to maintain compatibility or where 32-bit code would increase memory requirements without significantly improving performance. All of the I/O subsystems and device drivers (such as networking and file systems) in Windows 95 are fully 32-bit, as are all the memory management and scheduling components. Many functions provided by the Graphics Device Interface (GDI) have been moved to 32-bit code, including the spooler and printing subsystem, the TrueType[®] font rasterizer, and key drawing operations. Windows 95 includes a 32-bit implementation of OLE. Much of the window-management code (user) remains 16-bit to help ensure application compatibility.

- **Does Windows 95 improve limits on system resources?**

Yes. Windows 95 improves system-resource limits dramatically while maintaining compatibility with existing Windows-based applications. This means that users will not only be able to run more applications than Windows 3.1 or Windows for Workgroups 3.11, but will also be able to create more complex documents.

Plug and Play

- **What is Plug and Play? What benefits does Plug and Play provide?**

Plug and Play is a technology jointly developed by PC product vendors that will dramatically improve the integration of PC hardware and software. Windows 95 is a key enabling technology for Plug and Play. Plug and Play is built into all levels of Windows 95 and covers both common desktop and laptop devices, such as monitors, printers, video cards, sound cards, CD-ROM drives, SCSI adapters, modems and PCMCIA devices.

With Windows 95, a user can easily install or connect Plug and Play devices to the system, letting the system automatically allocate hardware resources with no user intervention. For example, by simply plugging in a CD-ROM and sound card, a desktop PC can be easily turned into a multimedia playback system. The user simply plugs in the components, turns on the PC, and “plays” a video clip.

Windows 95 also enables new Plug and Play system designs that can be dynamically reconfigured. For example, a Windows 95 Plug and Play laptop can be removed from its docking station while still running and taken to a meeting; the system automatically reconfigures to work with a lower-resolution display and adjusts for the absence of the network card and large disk drive.

- **Will Plug and Play devices work with my current system, or will I need a new system? What benefits will I receive when I purchase a Plug and Play device with my current system after I have installed Windows 95?**

Windows 95 and Plug and Play devices will provide complete backward compatibility to work with systems that were not designed according to the Plug and Play specification. And when you purchase a Plug and Play device for a non-Plug and Play PC running Windows 95, you still benefit from the automatic installation features of Plug and Play add-on devices.

Application Support

- **What support does Windows 95 have for applications?**

Windows 95 supports applications for MS-DOS and 16-bit Windows-based applications supported by Windows 3.x as well as a new generation of 32-bit applications. It provides this support through the Win32 API, which is also available in Windows NT. This new generation of 32-bit applications will provide benefits such as greater robustness, smoother multitasking, long filename support, a new look and feel, and threads, to name a few.

- **When will applications that exploit Windows 95 be available?**

Applications written for Windows 3.1 and Windows NT that follow guidelines provided by Microsoft will be able to run on Windows 95. There are hundreds of 32-bit Windows-based applications available today for Windows NT, and more are released every day. In

addition, leading software vendors have already begun developing 32-bit applications for Windows 95, and we expect many to ship within 90 days of the ship date of Windows 95.

Networking

- **Will I need new networking software to connect Windows 95 to my network server?**

No. Windows 95 will continue to run existing real-mode networking components while enhancing the 32-bit protected-mode networking components first delivered with Windows for Workgroups.

- **What improvements will the networking support in Windows 95 offer over the support in Windows for Workgroups 3.11?**

In addition to being backward compatible with today's network clients, Windows 95 will enhance the open and flexible, high-performance 32-bit networking architecture offered today with Windows for Workgroups 3.11 that enables customers to mix and match networking components. Windows 95 includes fast 32-bit, native clients for both NetWare and Windows NT Server networks; supports NDIS 2.x, 3.x and ODI drivers; and provides 32-bit NetBEUI, IPX/SPX and TCP/IP protocols. In addition, the network architecture in Windows 95 will make it possible for users to connect simultaneously to multiple networks using multiple protocols.

- **Will there be a Windows 95 server product?**

Windows 95 will not be provided in a separate server product. Windows NT Server is the Microsoft product to use for production servers. Windows 95 does improve upon the peer-server capabilities offered in Windows for Workgroups by offering additional features for remote installation, control and administration. These features will make Windows 95 an even better product for an easy-to-use file-sharing and print-sharing LAN that is ideally suited for a small business, small department or remote office.

- **Can Windows 95 connect to the Internet?**

Yes. Windows 95 includes the networking support you need to connect to the Internet. It includes a fast, robust, 32-bit TCP/IP protocol stack (TCP/IP is the language used by the Internet) as well as PPP or "dial-in" support. Windows 95 supports the large number of tools used to connect to the Internet, such as Mosaic, WinWAIS and WinGopher, through the Windows Sockets programming interface. Windows 95 also includes standard Internet utility support, such as telnet and ftp. In addition, the Microsoft Exchange mail client included with Windows 95 provides a mail driver that supports Internet electronic mail standards, including SMTP and POP, to make it easy to send and receive mail over the Internet.

Systems Management

- **What specific desktop-management features will Windows 95 enable?**

The Windows 95 operating system can be set up from a network server and can be configured at the desktop to run locally or across the network. In each case, the administrator can establish a specific configuration for the installation, controlling which features are installed and which features can be accessed or altered by the end user.

Windows 95 supports policies, which are settings an administrator configures to define what applications or services users or groups of users can access using their PCs. Using policies, for example, the administrator can disable the MS-DOS prompt and the “Run” commands to prevent users from arbitrarily running applications and can disable file-and-print sharing.

To enable users to rove and use any system on the network, Windows 95 will provide user profiles. These profiles will be centrally stored, accessed when the user logs in to a Windows 95 system, and used to install the appropriate configuration and set the appropriate policies for that user. Windows 95 also enhances the security provided by Windows for Workgroups to include user-level security.

Windows 95 also includes key desktop agents for popular server-based backup programs as well as SNMP and DMI. Finally, hardware installation and configuration will be made much easier and less costly with the implementation of the Plug and Play architecture in devices and systems. The Windows Registry will provide data about hardware resources. The data can be accessed by third-party vendors to provide inventory-management solutions.

Messaging and Mail

- **What is Microsoft Exchange?**

Microsoft Exchange is a universal information client built into the Windows 95 user interface that can read and send electronic mail from different e-mail systems, including LAN-based systems such as Microsoft Mail, Internet mail, or mail on remote on-line system services such as CompuServe or The Microsoft Network, and can send and receive faxes and other remote messages. Microsoft Exchange in Windows 95 also includes Microsoft At Work fax software for sending and receiving electronic fax messages. Microsoft Exchange also provides an effective way to organize, sort, categorize and filter messages.

The Microsoft Network - Online Service

- **What is The Microsoft Network?**

The Microsoft network is a new on-line service that Microsoft is developing to help bring the rapidly expanding world of electronic information and communication to mainstream PC users. The Microsoft Network (MSN) will bring all Windows 95 customers

affordable and easy-to-use access to electronic mail, bulletin boards, chat rooms, file libraries, and Internet newsgroups. Microsoft Windows 95 customers worldwide will be able to access MSN with a local phone call. The Microsoft Network will offer a wide range of online information and services, and in particular Microsoft customers will find MSN the single best place to go to get information and support for Microsoft products. The MSN client's tight integration with Windows 95 allows customers already familiar with Windows 95 to leverage their learning, and feel comfortable on-line immediately.

- **Why is Microsoft getting into the online services business with The Microsoft Network?**

Microsoft has long believed in "Information At Your Fingertips," and we believe that the Microsoft Network represents a major opportunity for us to deliver on that vision. Enabling PC users to easily communicate and access information is the next great opportunity in our industry. The online service business has great promise to provide consumers with that easy communication and information access, but it's still in the infancy stage and many factors must come together to make it a mainstream phenomena. Online services must offer a more compelling multimedia-rich set of publications, shopping services, games, etc., that will both attract and retain a large audience. This will require investments by both the providers of information and services, and new tools and infrastructure investments by the online service companies. Microsoft hopes to help expand this market by enabling the providers of information and services with better technology and tools, while motivating them with a more attractive business model.

Mobile Computing

- **What improvements will Windows 95 offer for people who use a mobile or remote computer?**

Windows 95 is designed to make using PCs "away from the desk" easier and more powerful for everyone. Any notebook or portable computer user will benefit from improved support in three areas: remote network access (or "dial-up networking"), hardware support, and support for the mobile work environment.

- **"Dial-Up Networking" provides access to information when you're on the road.** Windows 95 includes a dial-up network client that allows a mobile or remote computer to dial into popular remote networking server products, such as Shiva[®] Netmodem, NetWare Connect and Windows NT Remote Access Services, using the same network protocols and advanced security features provided for desktop PCs.

Windows 95 includes new support for the dynamic nature of mobile computer hardware. The Plug and Play implementation in Windows 95 will support inserting, configuring and removing devices such as PCMCIA cards while the operating system is running. Windows 95 will also support automatic reconfiguration of portable computers when they are inserted or removed from docking stations or port replicators.

- **Windows 95 includes features optimized for mobile computer users.** Mobile computer users face special problems because of their work environment. Electronic mail and Fax work differently on a mobile computer than they do on a desktop system. Mobile computer users must contend with limited resources, such as disk

space or battery power. And many mobile computer users exchange files with a second, desktop, PC or file server.

The Microsoft Exchange client (see above) includes features such as Remote Mail and Microsoft At Work™ Fax that make staying in touch while on the road easy and reliable.

An enhanced version of Advanced Power Management (APM) will further extend battery life. File Viewers for the top 20 or 30 application file formats, plus support for integrated disk compression, reduce demands on hard disk space. Deferred Printing support enables storage of print jobs while on the road, for eventual printing back in the office.

Finally, Windows 95 will provide file-synchronization services and a direct-cable-connection file-transfer utility to simplify coexistence with other computers.

■ **How are the remote-client capabilities in Windows 95 different from those in Windows for Workgroups 3.11?**

Clients running Windows for Workgroups could dial into Windows NT Server or Windows for Workgroups-based servers only. Windows 95 supports a much more diverse remote-access environment; it can connect to the majority of the dial-in systems in common use today. Windows 95 dial-up networking has been extensively tested with Windows NT Server and other PCs running Windows 95, NetWare servers running NetWare Connect, popular network devices such as the Shiva Netmodem, and many Internet service providers. Windows 95 includes built-in protocol support for Windows 3.1 RAS, PPP (Point-to-Point Protocol, the emerging standard for dial-up networking and Internet access), SLIP, and NetWare connect. All dial-up networking and communications services are fully 32-bit, in order to increase performance and reliability.

■ **Does Windows 95 offer any improvements in ways to roll out and support remote network access in an organization?**

Yes. Windows 95 greatly simplifies remote network access. System administrators can supply end users with pre-configured network shortcuts and pre-defined connections to remote networks. Double-clicking on a shortcut will dial the phone, log users into the network, and open the desired network resource (such as a file folder on a remote server). Alternatively, a “New Connection Wizard” steps users through the process of setting up a remote access client or server. Users no longer need to know how to set up a modem, establish a connections, or operate a remote communications package.

For small organizations, a Windows 95 PC can operate as a dial-in server. A Wizard assists with the setup process. Dial-in server functionality can be disabled, if desired.

■ **Has Windows 95 improved support for PCMCIA cards and other hardware like docking stations?**

Yes. Windows 95 offers vastly improved support for PCMCIA cards and other mobile computing devices. PCMCIA is built into the core of Windows 95. The operating system will automatically load the necessary drivers for each card as it is inserted, and unload the drivers once the card is ejected. No real-mode card or socket drivers are required. When

a new card is first inserted, Windows 95 will detect the card and install the appropriate drivers automatically.

If you use a docking station or port replicator, all pertinent system settings, including video resolution, keyboard, pointing device, and network, are automatically re-configured “on the fly” when your computer is inserted or removed from the dock or port replicator. On systems featuring a Plug-and-Play BIOS, no reboot is required. On non-Plug-and-Play machines from the leading manufacturers, multiple configurations are supported automatically when the system is restarted.

■ **I use both a desktop PC and a portable PC. What support does Windows 95 offer for this environment?**

Windows 95 introduces the Briefcase, an easy-to-use interface for keeping multiple versions of files “in sync.” For example, if you copy several files from your desktop PC to your laptop, the Briefcase automates the process of comparing your (perhaps edited) files to the original versions, and performing any needed copy operations to keep all the files up-to-date. The Briefcase also enables applications to provide “reconciliation handlers” that merge documents together when both the original and the copy have changed.

To simplify the process of exchanging files between two machines, Windows 95 implements “Direct Cable Connection.” Direct Cable Connection provides a simple, fast, network-like connection (including security) between two machines, using a parallel or serial cable.

For More Information

■ **How can I obtain the latest information directly from Microsoft about Windows 95?**

To help keep you informed of the latest information on Windows, Microsoft has created the WinNews information forum, which serves as an easily accessible electronic-distribution point for new white papers, press releases and other pertinent documentation. If you have a modem or access to the Internet, you can always get up-to-the-minute information on Windows 95 direct from Microsoft on WinNews. Use the following electronic addresses to access further information:

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