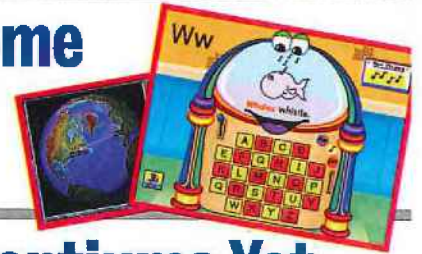




PC Magazine At Home

Back to School with Software for All Ages



Fastest Desktop Pentiums Yet

66 New 120- and 133-MHz Screammers

John Dvorak on Upgrading Grandma's Old PC: Are You Man Enough to Try?

PC Labs Tests the Real

WINDOWS

95

■ Is It Really Easier?

■ Is It More Stable?

■ How Fast Does It Run?

And Compares It with

OS/2

WIN 3.1

NT

■ Will It Work With Your System?



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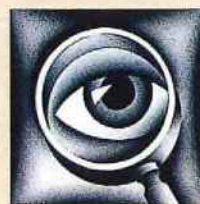
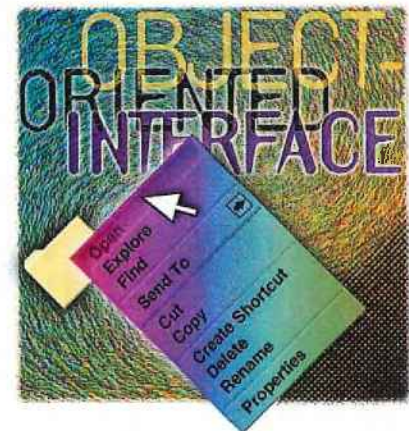
Winners and Losers in '95.....95

COVER STORY

Your Next OPERATING SYSTEM

BY MICHAEL J. MILLER

At long last, Microsoft has delivered Windows 95. But is it right for you or not? To help you decide, we put the shipping version of Windows 95 through hours of exhaustive testing, measuring its performance, stability, capacity, and compatibility against the dominant operating systems on today's PCs: Microsoft Windows 3.1, Microsoft Windows for Workgroups 3.11, IBM's OS/2 Warp Connect Version 3, and Microsoft Windows NT Workstation 3.51. We also compare their user interfaces, contrast their bundled applications, survey their networking features, and lift the covers of their underlying architectures. An operating-system upgrade is serious business. Here's what you need to know about 32-bit platforms to make the right choice102



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Your Next OPERATING SYSTEM

By Michael J. Miller

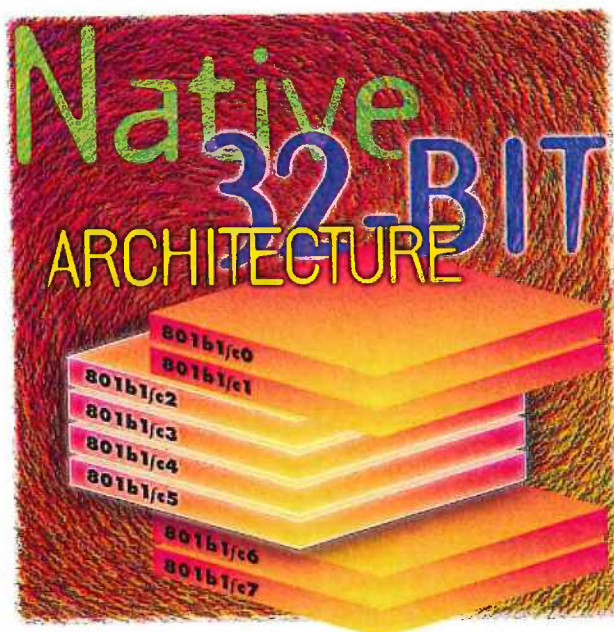
The wait for Windows 95 is over at last. Microsoft has delivered final code for its long-awaited operating system, and now you can get on with the serious business of figuring out whether or not this is the OS you should be running.

To help you decide, PC Labs has put the shipping version of Windows 95 through exhaustive tests, systematically measuring its performance, stability, capacity, and compatibility against the dominant operating systems on today's PCs: Microsoft Windows 3.1, Microsoft Windows for Workgroups 3.11, IBM's OS/2 Warp Connect 3.0, and Microsoft Windows NT Workstation 3.51.

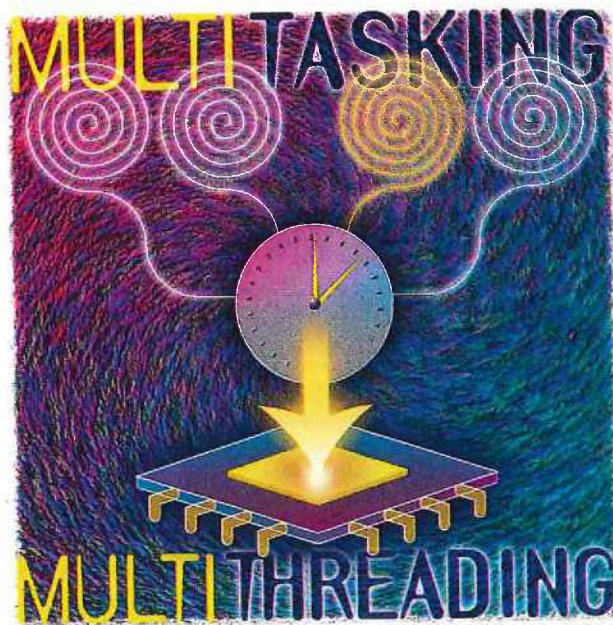
DOS'S DAYS ARE NUMBERED

One thing is clear: Even though the overwhelming majority of *PC Magazine* readers are running Windows 3.1 today, we're firmly convinced that the days of MS-DOS and Windows 3.1 are numbered. The advent of new, more sophisticated operating systems and the market acceptance of fast PCs with ample RAM and hard disk storage at reasonable prices mean that you no longer have to cope with the limitations of DOS and Windows 3.1.

Whatever advanced operating system you'll be



Today's 32-bit operating systems are a logical match for the native 32-bit architectures of advanced microprocessors like the 386, 486, and Pentium. Under a 32-bit OS, programs can manipulate 32-bit chunks of data and address large memory areas in a logical, streamlined manner. Application code can be smaller and, depending on the type of operation it is performing, noticeably faster. A 32-bit architecture is also a big win for programmers, who no longer have to wrestle with the Byzantine complexity of 16-bit segments and offsets.



Windows 3.1's simple *cooperative multitasking* scheme is often everything but cooperative. The three 32-bit contenders poised to succeed it offer *preemptive multitasking*, a far more robust way for the OS to divvy up system resources. The unit that is multitasked is a program *thread*, a fully functional subset of a program. Your apps can have multiple threads performing separate tasks at the same time. The net result is far smoother multitasking, better program response, and less waiting for the hourglass to go away.

using in the next few years, many of its characteristics are already clear. All the contenders are, at least in large part, 32-bit designs that support 32-bit applications with far more advanced features than the 16-bit DOS and Windows software we're used to. At the same time, these new OSs can run most of those existing 16-bit applications. All provide more protection for these new applications, so that one errant program won't be as likely to crash the whole system. All offer true multitasking (the ability to run multiple programs at the same time) as well as multithreading (the ability to have a single program do multiple things at the same time). All provide (or, in the case of Windows NT, will soon provide) a new user-friendly interface with object-oriented characteristics. And all offer broad network connectivity out of the box.

NOISY ARRIVAL

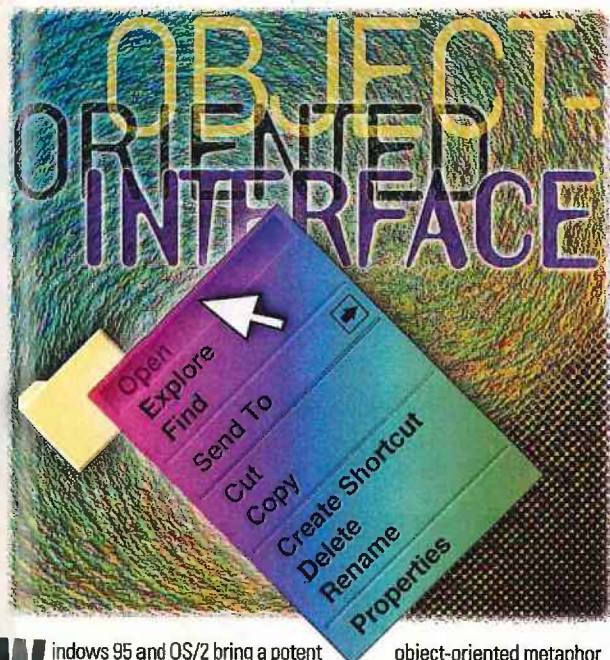
Windows 95 comes into this market surrounded by a glow of novelty, but in many ways, it simply builds upon the fea-

Will Windows 95 be your next OS? What about OS/2 Warp Connect? Or Windows NT? Should you stay with Windows 3.1? It's time for a tough choice.

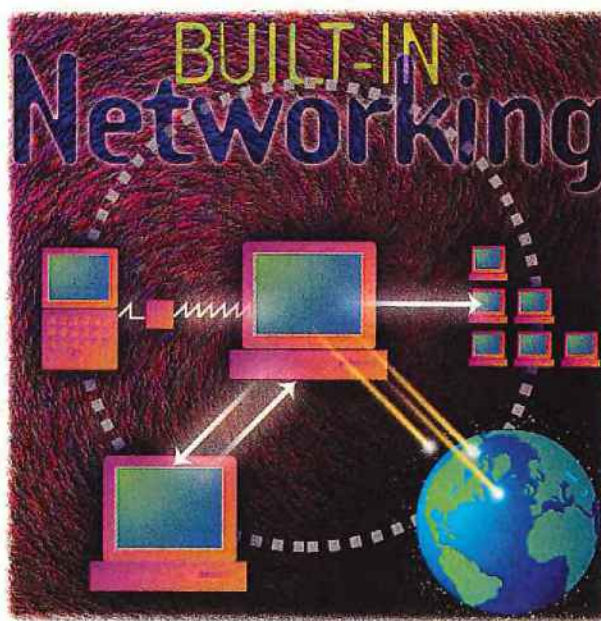
tures of earlier operating systems. The basic architectural design of a 32-bit, protected, multitasking, multithreaded OS isn't new. OS/2 has been offering these features for years; it was followed by Windows NT, and both were preceded by variants of Unix. The new set of networking features in Windows 95 builds on features offered in Windows for Workgroups 3.11 and Windows NT. Even Windows 95's user interface has precedents: A desktop look with files and folders was popularized by the Macintosh more than ten years ago, and the taskbar follows in the tradition of utilities like

Starfish Software's Dashboard and OS/2 Warp's Launch Pad. It's the slick combination of all those features—along with others like the convenient Plug and Play standard—that makes Windows 95 worthy of the attention.

The most important question is one of execution: How well does Windows 95 do in the critical measures of performance, stability, and compatibility compared with its competitors? Are any of the alternatives worth the effort it takes to switch over?



Windows 95 and OS/2 bring a potent object-oriented metaphor to the user interface. Your screen becomes a true desktop, and you can use it to host objects representing programs, files, drives, devices, and directories. An object-oriented shell also has the intelligence to tell you about the objects it contains. Right-clicking on any object brings up a context menu with details on all its properties and all the things you can do to it. Windows NT still uses the old Windows 3.1 interface, but a slick Windows 95-style shell is in the works.



At last, networking has become a standard OS component. When you switch to an advanced OS, you will also be getting connected. Out-of-box support for Novell and other common PC LANs is commonplace, and TCP/IP is fast becoming a standard part of OS bundles. Connectivity features may also include priceless aids for mobile users such as remote dial-up and high-speed cable connections. To hook up to the rest of the world, OS/2 Warp provides a World-Wide Web browser to get you on the Internet; Windows 95 offers a browser in Microsoft Plus!

In the sections that follow, we answer these questions. We start with an overview of each of the operating systems, summarizing the findings of our recent tests as well as our earlier examination of the features of each environment. (See "Getting Ready for Windows 95," May 16, 1995, which contains more details on each of the operating systems as well as a complete look at their architectures and networking features.) We then go into more detail on the underlying design of each system and follow that with in-depth testing of performance, stability, and compatibility.

THE BOTTOM LINE

What are you trying to accomplish with your computer? Answer that question, and you'll be well on your way to knowing which OS to use. There is no single "best" OS that's the right choice in all cases. That said, the right OS for you is the one that best runs the applications you want, taking into account its system requirements and your compatibility concerns.

If you have a machine with 4MB of memory that runs well enough for you, and you don't want to upgrade your hardware, stick with DOS and Windows. This setup

works pretty well for most people and has an enormous base of software support. While developers are now designing 32-bit applications, the huge installed base of Windows 3.1 and Windows for Workgroups 3.11 assures that you'll have application support for a long time to come.

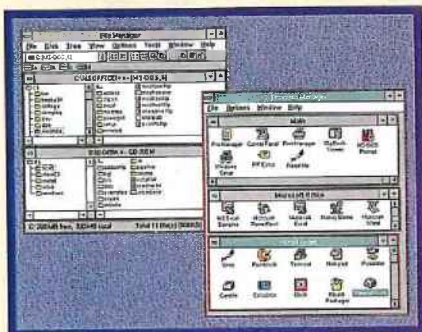
If you have at least 8MB of memory and an extra 60MB of hard disk space, or are willing to upgrade, then Windows 95 is the compelling choice. It offers all its new features with little upgrade pain. In our tests, it installed relatively easily in most circumstances, did well in compatibility

Features of Your Next OS: *Despite their differences, all the new 32-bit*

MICROSOFT WINDOWS 3.1 & 3.11

MICROSOFT WINDOWS 95

USER INTERFACE

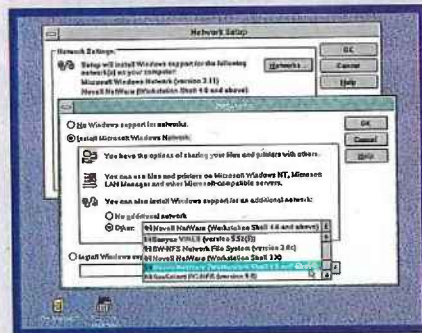


▶ Nothing new here. File Manager can't read Program Manager groups, and your groups stay stuck in Program Manager. You can't drag documents or programs to the desktop. There has got to be a better way.

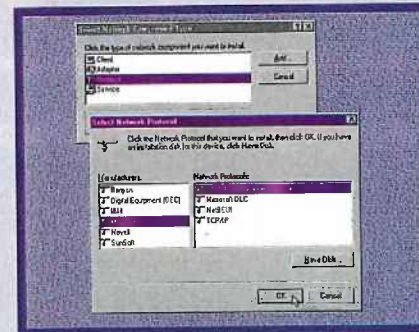


▶ The Windows 95 interface offers a true desktop with icons for programs, documents, directories, and system components. Context menus, accessed by right-clicking, give you the relevant actions and properties for any object.

NETWORKING

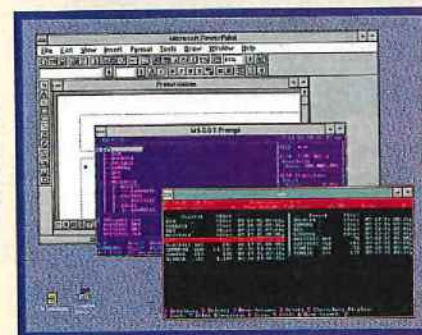


▶ Windows 3.1 is mildly network-aware, but Windows for Workgroups actually includes peer-network capability in the box. It also lets you configure Windows with many standard third-party networks such as Novell NetWare.

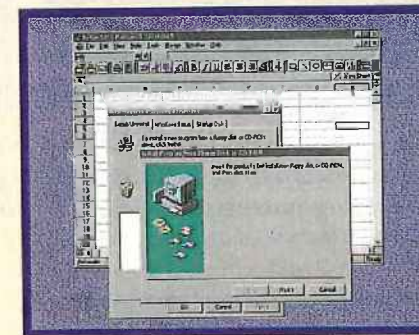


▶ Windows 95 comes out of the box with a nice suite of popular network protocols and an impressive collection of network adapter card drivers. Utilities like Network Neighborhood make server navigation extremely easy.

COMPATIBILITY



▶ In addition to running its native 16-bit and Win32s applications, Windows 3.1 supports most of your old-standby character-mode DOS applications, which you can run either in a windowed session or full screen.



▶ Compatibility with 16-bit Windows programs is near perfect, and installation is the same for 16-bit and native apps. You can also continue to use your 16-bit device drivers if you need to. DOS programs are well supported, too.

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