



**Microsoft®**

# Microsoft® Office **Whitepaper**

for Windows® 95

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## Supporting Windows 95

### Introduction

Microsoft® Windows® 95, the first update to the powerful Windows operating system in four years, is a technically advanced and extremely powerful 32-bit operating system. But all the power in Windows 95 cannot be realized until there are applications which are designed to exploit its 32-bit performance capabilities. Microsoft Office for Windows 95 is designed to exploit these enhancements to create the best, most integrated and easiest to use office suite.

The challenge faced by developers of Microsoft Office for Windows 95 wasn't simply to support Windows 95, it was to support it in a way that met the needs of our customers in the best possible manner.

The purpose of this document is to explain how Office 95 takes advantage of these specific Windows 95 enhancements:

- A full 32-bit, protected mode operating system.
- A new Windows user interface that is significantly easier to use than the previous interface.
- Robust OLE 2.0 Support
- Easier setup and configuration.
- Superb network, client, and peer-to-peer functionality.
- Integral support for electronic mail and MSN™, the Microsoft Network.

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### Robust 32-Bit Environment

Windows 95 provides application developers with many enhancements which can improve application performance. The Microsoft Office development team has dedicated significant development resources to take advantage of Windows 95 memory management, system resources management, multi-tasking and multi-threading capabilities.

### Protected Mode Operating System

Windows 95 is a *32-bit operating system*. Information moves into and out of its memory 32-bits at a time, as opposed to the 16-bit operations of Windows 3.x. Because the amount of information that can move into and out of memory has

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increased, Windows 95 applications have the potential to outperform their Windows 3.1 predecessors. However, to exploit this potential, the programs that run within Windows 95 must be full 32-bit applications.

Each Office 95 application is designed to take advantage of the 32-bit Windows architecture. In fact, the Microsoft applications shipping in Windows 95 are the *second generation* of 32-bit applications from Microsoft. Microsoft Word and Microsoft Excel for Windows NT™ Workstation, both of which have been shipping for over a year, are 32-bit applications that run within the Windows NT environment. Microsoft learned a lot from doing those releases and, as a result, much of the 32-bit code in Office 95 is actually second-generation 32-bit code — the first generation being the Windows NT versions of our products.

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**Important** Office 95 is designed to also run on Windows NT Workstation, version 3.51. Because Office 95 was developed using the Win32® API, which is common to both Windows 95 and Windows NT, Office 95 runs seamlessly in both the Windows NT operating system and the Windows 95 operating system.

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Since each Windows 95 applications runs in its own protected memory space, no other application can intrude on it or cause the program to malfunction. This is possible because Windows 95 uses a special operating condition of the Intel processor called *protected mode*, in which the processor itself sets up discrete memory areas for each program and polices them, stopping programs from using memory not assigned to them. Protected mode makes Windows 95 a more stable and safer operating system. Since Office users tend to frequently run multiple applications at the same time, the more stable, protected environment provides a significantly safer environment for Office users.

## Performance

The 32-bit Windows environment provides a more robust environment for Office 95 with better system resource management, memory management, multi-threading and multi-tasking capabilities. The Office developers have painstakingly optimized the Office 95 code using 32-bit assembler for better performance in the Intel 32-bit environment. Office 95 has been optimized to take advantage of the smaller page memory model offered in the Windows 32-bit environment. The key opportunities for enhanced performance in the Windows 32-bit environment include:

- **Optimized Working Set (RAM)** The Office developers have re-organized the most frequently used code for better performance in the most common user scenarios. For these common scenarios such as recalculations, file load and save, Office 95 prioritizes the frequently used code into smaller segments for quicker access. This enables Office 95 applications to keep a minimum amount of unused code in memory for faster operation of common tasks. The result is increased performance for many of the most common user tasks.
- **Speed** Without the constraints of the Windows 3.x 16-bit environment, Microsoft developers were able to optimize Office 95 to take advantage of the 386, 486, and Pentium® processors. For example, opening, saving and paging through a typical Word document is quicker and scrolling is smoother. In addition, the Microsoft Excel Development Team has rewritten the Microsoft Excel recalc engine in 32-bit assembler code for dramatically faster performance in the 32-bit Windows environment. Microsoft Excel has also done extra work to take advantage of the Pentium instruction pipeline for dramatically enhanced performance on Pentium processor machines. As a result of this performance optimization

work, Microsoft Excel 95 users can expect a 30 to 50 percent increase in recalculation performance on average over Microsoft Excel 5.

- **Multi-tasking** Windows 95 features preemptive multi-tasking. This allows users to do multiple operations in different applications simultaneously with graceful performance degradation. For example, a user can send Windows 95 Explorer searching across the network for a particular file, minimize it, and keep working in a Microsoft Word document. Similarly, users can print in one Office application while working in another application without interrupting screen updates and system operation that were common while multi-tasking in Windows 3.1.
- **Multi-threading** Windows 95 also provides applications with the opportunity to write multiple threads within a single application. Office 95 has implemented threads where it makes sense for discrete background tasks that do not slow application performance. The most notable threads are background printing in Word and PowerPoint®, Slide Sorter in PowerPoint and queries in Microsoft Access. These threads allow users to execute multiple commands simultaneously within the same application. For example, a user could print a PowerPoint presentation and continue formatting his or her presentation notes pages at the same time.

## A New User Interface for Windows

In Windows 3.1 the “shell” consisted of the utility applications through which the user operated the Windows environment—Program Manager, File Manager, and Task Manager. In Windows 95 the shell has been completely replaced with new, more unified components that significantly enhance the Windows environment. The Windows 95 shell consists of desktop folders, Explorer, the Taskbar, and the desktop itself.

The following table looks at the Windows 95 user interface improvements and how Microsoft Office for Windows 95 supports them.

<b>Feature</b>	<b>How Microsoft Office 95 supports it</b>
Right mouse button support	Office 4.x pioneered right mouse button support as an integral part of the user interface. Windows 95 standardizes the use of the right mouse button for the industry. Office 95 places the most common user commands within easy reach on right-click menus.
Windows 95 shortcuts	Windows 95 allows users to create shortcuts to documents, applications, printers, network and locations—basically anything and everything. Office 95 takes advantage of this by supporting shortcuts in all of its document management dialogs. Also, users will be able to drag portions of Office documents onto the desktop, creating a shortcut to this information. For example, users can create a shortcut to specific chapter within a long Word document.
System colors and metrics	Office 95 respects the Windows 95 system colors and metrics. Users will be able to change Windows 95 settings—e.g. change the height or width of a scroll bar—and Office will automatically reflect the changes.
Registry support	All Office settings and information are stored in registry files. The Windows 95 registry supports individual user settings, so multiple users will be able to use the same machine with different preferences. The key benefit of having all settings in the registry is remote administration. Network administrators can easily change Microsoft Office for Windows 95 settings remotely using Windows 95.
Long File Names	Office 95 supports the Windows 95 convention for 250 character long file names. When sharing files with MS-DOS® applications, Office 95 automatically handles the shortening of the long file name for those applications. It also automatically restores the long file name for applications that support the functionality.
Document properties from shell	Right clicking on any Office document from the Windows 95 desktop enables users to view document properties just as if they had selected Properties from the File menu within an Office application.
Document viewers from shell	An Office 95 user will be able to right click on an Office document and select Preview from the shortcut menu to see a preview of the document, without having the application resident or having to launch the application.
New document creation from shell	From the Windows 95 desktop, a user can create an empty Microsoft Excel, Word, or PowerPoint document quickly by right clicking on the desktop and selecting New.

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## **Tighter Integration with Support for OLE**

Office 4.x pioneered application support for Object Linking and Embedding (OLE 2.0) in 1993. With Windows 95 OLE 2.0 becomes a universal part of the operating system services. Therefore, users can expect an abundance of Windows 95 applications that support OLE integration. Office 95 provides second generation support for OLE 2.0 with extensions that build on OLE technology.

- **Drag and Drop with Taskbar** Windows 95 makes it dramatically easier to share information between applications with OLE. Since Office 95

supports OLE drag and drop, users can easily move Microsoft Excel charts or Word paragraphs to another application simply by dragging and dropping the object using the Windows 95 Taskbar. When the user hovers over the Taskbar button, the destination application will maximize and allow the user to drop the object anywhere within the open document or spreadsheet.

- **Extensions to OLE** The Office 95 Development team has built extensions to OLE to provide users with enhanced integration and file management capabilities.
- **Custom OLE Properties** All Office 95 applications allow users to create Custom OLE properties in addition to the standard Summary Information properties available in the Office 4.x applications. Custom OLE Properties can be created to represent text, numbers, Boolean values (yes or no) or linked document text(bookmarks in Word) or cell values (named cell in Microsoft Excel) within the file. Custom OLE Properties enable users to view important file information without opening the file. Users of Microsoft Exchange Server will be able to sort entire folders of files based on these Custom OLE Properties.
- **DocObjects** Office 95 provides extensions to OLE, called DocObjects, which handle entire documents as “objects” that can be incorporated into other applications. With this technology, Office users can create robust compound documents in Office Binders and use WordMail, where Word is their email editor.

## Easy Setup and Configuration (Plug and Play)

Office 95 supports screen resolution changes from Plug and Play, along with any system changes that result from someone using Plug and Play (leaving or returning to a docking station, adding memory, sound cards, hard disks, etc.).

The following table explains Plug and Play support in Microsoft Office more fully:

<b>Plug and Play Feature</b>	<b>How Microsoft Office 95 supports it</b>
Screen resolution change	When the user changes the screen resolution, Office applications reflect the change immediately.
Windows control re-sizing	When the Windows 95 controls change, Office controls change. This applies to scroll bars, title bar height, fonts, etc.
Software laptop undocking	The user may, using a software eject, remove the laptop from a docking station at any time. Office 95 will correctly shut down applications for safe undocking.

## Superb Network and Workgroup Support

### WordMail

Users can configure Word to operate as their e-mail client for Microsoft Mail and/or Exchange. This makes the power of Word — rich text, outlining, styles, etc. — available in e-mail. More importantly, it lets Office 95 technology be used not just for the creation of business documents, but in the activity of doing business as well.

### Briefcase support

The Windows 95 Briefcase is a special folder that users employ to “take on the road.” Users copy the files to the Briefcase, take it home on disk, work on the

files, return the next day, and update the files in the Briefcase to the hard disk or a network location. Microsoft Access provides additional supports for reconciliation of Access data with server-based data through the Windows 95 briefcase. Access resolves record-by-record conflicts that may occur between the Briefcase version of a database and the one on the desktop PC.

## Support for Universal Network Conventions (UNC)

UNC is a standardized way of accessing network volumes and servers. UNC is designed to let users get to their information no matter which network they are using — Windows NT, Novell®, Banyan, etc. The standard structure for UNC is:

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\\server_name\share_name\directory_path\filename.ext
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The benefit of UNC is that anyone, anywhere, can access information on any network, as long as they know UNC conventions. (And have security rights to that network, of course.)

Microsoft Office has supported UNC path names since Office 4.x. Office 95 improves this support to work better with Novell NetWare® and other networking schemes that offer only partial support of UNC names.

## Microsoft Network support

Users of Office 95 will be able to automatically connect to the MSN, the Microsoft Network, and get the help they need. All of the Office applications have a Microsoft Network menu item on the Help menu.

Users also have the option of creating Windows 95 shortcuts that go directly to specific areas on MSN, and adding those shortcuts to any Office 95 Help menu.

## Microsoft Exchange

Microsoft Office for Windows 95 will provide the best integration with Microsoft Exchange. As a client, it will:

- Have direct access to Exchange servers and folders in File Find and File Open.
- Register all its file formats with Exchange automatically.
- Be able to post all files generated in Microsoft Office to Exchange.
- Surface much of the Exchange API to any Visual Basic® or Visual Basic for applications solution running under Office 95.

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