Installation and Setup of Windows 95

C H A P T E R   1 6

The very first contact that users will have with Windows 95 will be during the time they initially install it on their computer. If the Setup process is not easy, or the user is confronted with a series of configuration-related questions that they don't understand how to answer, the initial experience with an operating system for a novice or intermediate user will be bad, and will set the tone for their initial trial. Advanced users can overcome difficult installation procedures, but their frustration level will still have a finite threshold.

Setup in Windows 95 is completely rewritten to offer greater flexibility and better customization than Windows 3.1 does. In addition, Setup in Windows 95 is more modularized than Setup in Windows 3.1, allowing the easy customization of individual Setup steps, as well as the easy installation of new custom components.

Filename: in.doc   Project: *Insert existing text here and delete this text. Do not remove the following paragraph.
Template: Author: Shane A. Gonzales   Last Saved By: Shane A. Gonzales
Revision #: 2   Page: 281 of 11   Printed: !Unexpected End of Expression

Summary of Improvements over Windows 3.1

Setup of Windows 95 has been improved over Windows 3.1 in a number of areas, including:

 A modular setup architecture that provides increased customization and flexibility

 An entirely GUI-based approach and improved interaction with the user, including better visual feedback of progress during setup

 Improved hardware device detection and configuration support

 Better customization over components to install

 Built-in smart recovery mechanisms for failed setup

 Built-in verification of installed components for easy correction and replacement of corrupted or deleted files

 A network setup process which is well-integrated with other setup components, and provides support for a number of network installation configuration scenarios

 Support for an automated batch installation procedure, allowing Windows 95 to be installed with little or no user intervention

 Better flexibility for PC installers, VARs, and MIS organizations to customize Setup by adding components to be installed at setup time, such as custom in-house applications or other solution offerings

Modular Setup Architecture

Setup in MS-DOS is responsible for installing the basic disk operating system on the PC. Setup in Windows 3.1 is a combination of components and installation procedures inherited from prior versions, and is responsible for installing the GUI on the PC. Setup in Windows for Workgroups extended the Setup functionality in Windows 3.1 to install networking components on top of the GUI and disk operating system. As Windows 95 is a complete, integrated operating system, it is now responsible for installing the disk operating system, the GUI, and the networking functionality on the PC. This posed some interesting problems when the Windows 95 development team first approached the daunting task of writing

Filename: in.doc   Project: *Insert existing text here and delete this text. Do not remove the following paragraph.
Template: Author: Shane A. Gonzales   Last Saved By: Shane A. Gonzales
Revision #: 2   Page: 282 of 11   Printed: !Unexpected End of Expression

Setup for Windows 95.

The original Setup written for Windows was not flexible enough easily add additional components to the setup process, without making the installation procedures unwieldy. To make the installation process easier, modularized, and more flexible, the Windows 95 development team for Setup completely rewrote the installation code. Windows 95 also incorporates the use of more intelligent defaults and mechanisms for automatically configuring or installing key components while requiring only minimal user intervention, furthering the ease-of-use of the operating system.

For end-users, Setup in Windows 95 provides a simple, easy way to initially install and configure Windows 95. For MIS organizations, Setup in Windows 95 provides greater control and flexibility over components that are installed, and offers support for automated batch installs to further simplify the setup procedure.

GUI-based Setup Program

Setup in Windows 95 differs from that of Windows 3.1 by featuring an entirely GUI-based setup process. Using a GUI-based setup simplifies the interaction with the user by providing better visual feedback of configured options, and greater flexibility for navigating through the setup process. To support a GUI-based setup, Windows 95 features a Setup program that runs entirely from within the Windows environment. Users who have either Windows or Windows for Workgroups on their PCs already, Windows 95 Setup run like a Setup program for a Windows-based application. For new installations, Windows 95 Setup includes the necessary components to install a minimal version of Windows to support the GUI-based setup process.

The GUI-based Setup also provides better visual feedback to the user throughout the installation process. Users are constantly shown where they are in the setup process and are given a number of visual cues that the system is proceeding with the setup process.

Leveraging of Detection Code

The modular architecture of Setup also allows the leveraging of detection and installation procedures beyond the initial setup process. The same procedures and detection mechanisms used by Setup to detect and initially configure hardware devices and peripherals in the Setup process, are also used for maintaining or detecting the devices post-Setup. For example, the same code base used during Setup that for the detection of Plug and Play or legacy hardware devices is also used to detect or configure new devices once Windows 95 is up and running.

Filename: in.doc   Project: *Insert existing text here and delete this text. Do not remove the following paragraph.
Template: Author: Shane A. Gonzales   Last Saved By: Shane A. Gonzales
Revision #: 2   Page: 283 of 11   Printed: !Unexpected End of Expression

Improved Customization

Windows 3.1 provided few mechanisms for easily customizing the setup process, but Windows 95 makes customization easier for system administrators. Customization of Setup allows for better control over components installed into an existing environment. MIS organizations can now easily tailor the existing configuration options for Setup components such as supported network interface cards, or supported printers. Windows 95 also offers the flexibility for system administrators to add on components to be installed during the setup process or to run additional procedures during the final phases of Setup.

Improved Hardware Detection

During Setup, Windows 95 detects the different hardware devices and components configured on the computer and uses this information to install drivers and set the appropriate entries in the Registry.

Unlike the simple hardware detection mechanisms used in Windows 3.1 to identify the PC configuration for a narrow group of devices, Windows 95 provides more versatile hardware detection and configuration mechanisms and provides detection support for a wider range of devices.

Windows 95 provides straight-forward detection support for the base computer components such as communication ports and processor type, but provides more robust detection of system devices including video display adapters, pointing devices, hard disk controllers, floppy disk controllers, and network interface cards.

Windows 95 Setup also helps to detect any hardware resource conflicts at an early point during the setup process. Hardware resources such as IRQs, I/O addresses, or DMA address in use by more than one device can cause havoc when initially installing an operating system and may prevent the system from starting properly..

Windows 95 detects hardware components and devices one of two ways:

   It leverages Plug and Play detection to identify Plug and Play devices and peripherals.
   It uses a manual query detection mechanism for legacy devices and peripherals.

Once setup detects the device, Windows 95 installs the appropriate device drivers and configures the system.

Four Scenario Setup Options

Setup in Windows 95 will provide options to support common scenarios, designed to make it easy to install Windows 95 to meet your needs. The four scenarios supported by Setup in Windows 95 are:

- **Typical**. This is the option most users will select to perform a "typical" installation of Windows 95.

- **Compact**. This is the option will perform a "compact" installation of Windows 95, installing the minimal files needed for proper operation.

- **Laptop**. This is the option will install components of Windows 95 that are useful for laptop or mobile computer users.

- **Custom**. This option provides full customization of the setup process of Windows 95, allowing the user to install all, or selected components.

Simplified Four-Phase Setup

Windows 95 Setup is quite a bit simpler than Windows 3.1 Setup and is divided into four logical phases:

- Hardware detection
- Configuration questions
- Copying component files for Windows 95
- Final system configuration.

The following sections describe what happens in each of these phases.

Hardware Detection Phase

During the hardware detection phase, Setup analyzes installed system components, detects installed hardware devices, and detects connected peripherals. During this phase of Setup, Windows 95 analyzes the system to identify the hardware resources that are available (for example, IRQs, I/O addresses, and DMA addresses), identifies the configuration of installed hardware components (for example, IRQs in use), and builds the hardware tree in the Registry.

Windows 95 uses a number of mechanisms to detect installed hardware devices during setup. For legacy PCs, Windows 95 maintains a database of known

Filename: in.doc   Project: *Insert existing text here and delete this text. Do not remove the following paragraph.
Template: Author: Shane A. Gonzales   Last Saved By: Shane A. Gonzales
Revision #: 2   Page: 285 of 11   Printed: !Unexpected End of Expression

hardware devices and performs a manual detection to check I/O ports and specific memory addresses to attempt to identify whether they are being used by recognized devices. Windows 95 will also check for Plug and Play peripherals

connected to legacy PCs, which return their own device identification codes. For PCs that contain a Plug and Play BIOS, Windows 95 queries the PC for installed components and the configuration used by these components (Windows 95 also checks the system for connected Plug and Play Peripherals on Plug and Play PCs).

During the hardware detection phase of Setup, Windows 95 tries to identify hardware conflicts and provides a mechanism to resolve conflicts early during the installation process to overcome hardware configuration issues that Windows 3.1 users encounter.

Once the hardware detection phase is complete, the user is presented with a dialog box on the screen allowing them to proceed with Setup, or to review the hardware devices that were detected and system components that Windows 95 will install.

Configuration Questions Phase

Windows 95 uses information found in the first phase to determine which system components it will install. Windows 95 consolidates the configuration and customization phase of Setup into a single process at the beginning of the Setup procedure. By contrast, users were constantly asked for system configuration information and confirmations during Windows 3.1 Setup.

Users can review the components Windows 95 will install, and remove or add any components.

Copying Files

This phase of Setup is the most straightforward. Once the user has identified or confirmed the Windows 95 components to install, Setup begins copying files from the Windows 95 installation disks (or from a network server, if specified). Once the necessary files are copied to the user's PC, Setup prompts the user to remove any disks in floppy drives and then reboot the system to proceed with the final phase of Setup.

Final System Configuration

During the final system configuration phase, Setup upgrades the existing configuration of Windows and replaces the existing version of MS-DOS with the new Windows 95 operating system.

Filename: in.doc   Project: *Insert existing text here and delete this text. Do not remove the following paragraph.
Template: Author: Shane A. Gonzales   Last Saved By: Shane A. Gonzales
Revision #: 2   Page: 286 of 11   Printed: !Unexpected End of Expression

After files are updated and the system is configured, Setup guides the user through a process to configure peripheral devices such as modems or printers that may be connected to the system. Once this is done, Windows 95 is ready to use!

Better Control Over Installed Components

Users now have greater control over components and parts of Windows 95 that are installed during the Setup process. Based on the modular architecture of Windows 95, users will be able to selectively choose the options that Windows 95 will install for the given functionality that they desire.

Smart Recovery Mechanism for Setup

With Windows 3.1 Setup, if the system hung during device detection, or if Setup procedure ended abnormally, it would set a flag disabling hardware detection for the next time that Setup ran. This mechanism provided a means for a user to by-pass a section of setup that would otherwise fail. However, to do this the user was required to rerun the entire setup procedure and manually identify hardware devices.

Windows 95 supports a far better recovery mechanism in the case of setup failure. During the setup process, Windows 95 creates and maintains a log as the setup operations are performed and the hardware devices are detected. If Setup fails, perhaps due to a hang during hardware detection, the last entry in the Setup log identifies where the process was interrupted. To recover and resume, the user simply reruns Setup—the Setup program recognizes that it was run before, and will begin from where it left off. In the case of a hang during a hardware detection procedure, the system will actually bypass the detection module where the hang occurred, and will allow the user to manually select the proper hard device installed in or connected to the system.

Built-in Verification of System Files

Under Windows 3.1, if a user accidentally deleted a component file or a system file was corrupted, there was no easy way for a user to recover the given file. A user needed either to use the Expand utility to recopy over a known file, or to completely reinstall Windows 3.1 to reinstate a lost file.

Windows 95 provides some very flexible solutions to this problem. During the Setup process (and subsequent maintenance of the Windows 95 system), Windows 95 creates and maintains a log of the installed components. This

Filename: in.doc   Project: *Insert existing text here and delete this text. Do not remove the following paragraph.
Template: Author: Shane A. Gonzales   Last Saved By: Shane A. Gonzales
Revision #: 2   Page: 287 of 11   Printed: !Unexpected End of Expression

information is used as part of Setup's smart recovery support, and is also used to verify the integrity of installed components.

If a user runs Setup after Windows 95 is already installed, Setup asks the user whether to reinstall Windows 95 or simply to verify installed components. If the user wants to verify installed components, Setup examines the setup log and reruns through the Setup process *without* completely copying all system components. Windows 95 verifies the integrity of files that were installed during Setup with the files provided on the Windows 95 installation disks. If the integrity check fails due to either a missing file on the Windows 95 computer, or a file was corrupted, Setup automatically reinstalls the missing or damaged file.

This capability in Windows 95 greatly simplifies and reduces the time required to resolve missing files or corrupted configurations, thus helping to reduce the time and money required to support desktop configurations.

Network Setup Improvements

Windows 95 provides improved support for installation and use in network environments. Windows 95 can be installed on a network to upgrade existing Windows users, or can be used to convert existing MS-DOS PCs. Windows 95 offers the same capabilities for running Windows from a network, but also provides additional functionality to better address the requests of MIS organizations.

In addition to basic support for stand-alone computers, Windows 95 includes Setup provisions for better supporting the following installation:

 Installing and running Windows 95 from a local computer on a network

 Installing and running Windows 95 from a network server instead of installing on the local computer

 Installing Windows 95 on a network server and supporting diskless computers that RIPL boot from the network server

 Installing Windows 95 on a network server and supporting a computer with a single floppy drive to connect to the network and run Windows 95 from the network server

Additional information about network support in Windows 95 is discussed in the Networking section of this guide.

Filename: in.doc   Project: *Insert existing text here and delete this text. Do not remove the following paragraph.
Template: Author: Shane A. Gonzales   Last Saved By: Shane A. Gonzales
Revision #: 2   Page: 288 of 11   Printed: !Unexpected End of Expression

Network Installation Location Remembered

To make it easy to install new drivers when a user modifies the configuration of a PC in a networked environment, Setup in Windows 95 remembers the location on the network from which it was installed from. Whether the server was a NetWare server, or a Windows NT Server, when the new user adds a device or requires additional driver support files to properly run Windows 95, the Setup code will automatically attempt to get the files from the network server. Setup stores a UNC pathname in the registry, eliminating the need to maintain a permanent network connection on the PC.

Any user that has been prompted for the insertion of a disk containing needed files for Windows or Windows for Workgroups will find this new functionality a blessing.

Filename: in.doc   Project: *Insert existing text here and delete this text. Do not remove the following paragraph.
Template: Author: Shane A. Gonzales   Last Saved By: Shane A. Gonzales
Revision #: 2   Page: 289 of 11   Printed: !Unexpected End of Expression

Batch Installation Support

Windows 95 features a batch installation option that provides for the use of an installation script to automate the installation process. MIS organizations or VARs can simplify the installation procedure for a user by specifying answers to questions that Setup needs information for, as well as specifying defaults to use for installing and configuring devices such as printers.

System administrators can use the NetSetup tool provided with Windows 95 to create a batch script that specifies all of the options that Setup needs, thus providing support for hands-free installs. The batch install capability of Windows 95 is more flexible and customizable than that provided with Windows 3.1 or Windows for Workgroups 3.11.

Configuration Preserved When Upgrading from Windows or Windows for Workgroups

Windows 95 can be easily installed as an upgrade on a PC where Windows or Windows for Workgroups already exists. During the upgrade process, Windows 95 uses existing configuration information to set installation defaults and will examine the contents of specific .INI files to further determine the appropriate Setup options.

Windows 95 preserves configuration information, such as the Program Group definitions created by the user, and will maps user interface-related features or functionality from Windows 3.1 or Windows for Workgroups to that of the new interface used by Windows 95.

Filename: in.doc   Project: *Insert existing text here and delete this text. Do not remove the following paragraph.
Template: Author: Shane A. Gonzales   Last Saved By: Shane A. Gonzales
Revision #: 2   Page: 290 of 11   Printed: !Unexpected End of Expression

BLANK PAGE

IMPORTANT: This text will appear on screen, but will not print on a PostScript printer.

This page should be the last one in this file; it was inserted by running the InsertBlankPage macro.

Do not type any additional text on this page!

Filename: in.doc   Project: *Insert existing text here and delete this text. Do not remove the following paragraph.
Template: Author: Shane A. Gonzales   Last Saved By: Shane A. Gonzales
Revision #: 2   Page: 291 of 11   Printed: !Unexpected End of Expression