

NTFS for Win98

User's Guide

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1 *Introduction*

Welcome to *NTFS for Win98*. *NTFS for Win98* is a NTFS file system driver for Windows 95 and Windows 98. Once installed, any NTFS drives present on your system will be fully accessible as native Windows 98 volumes. With *NTFS for Win98*, users can share data in dual boot environments and facilitate migration to Windows NT/2000. Please read this entire guide before using *NTFS for Win98*.

2 Requirements

NTFS for Win98 works with the following versions of NTFS:

- ◆ NTFS for Windows NT 4.0, SP3 and higher
- ◆ NTFS for Windows 2000, Beta 3, RC1, RC2

NTFS for Win98 works on the following versions of Windows:

- ◆ Windows 95
- ◆ Windows 95 OSR2
- ◆ Windows 98
- ◆ Windows 98 SE

3 Approach

NTFS for Win98 takes a unique approach to providing cross-platform file system support. Rather than implement code to read and write NTFS drives, *NTFS for Win98* uses the NTFS and NTOSKRNL system files from a Windows NT or Windows 2000 configuration. *NTFS for Win98* wraps the Windows NT/2000 NTFS driver in a run-time environment that simulates the Windows NT environment the NTFS driver is written to use. Thus, *NTFS for Win98* does not rely on potentially unreliable reverse-engineered information about NTFS, provides ultimate compatibility with NTFS, and takes advantage of Microsoft NTFS bug fixes whenever you update the NTFS driver file *NTFS for Win98* uses to a more recent version.

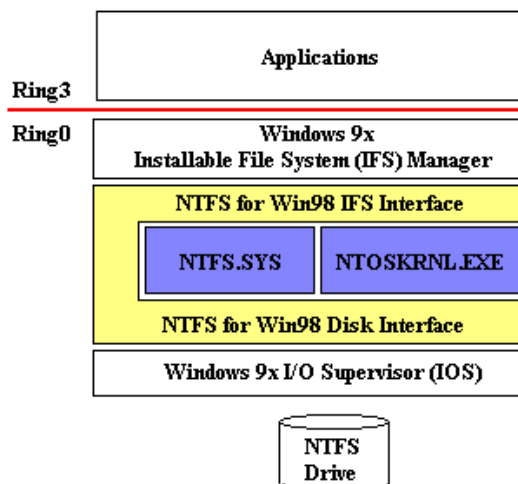


Figure 3-1

Figure 3-1 depicts *NTFS for Win98*'s relationship with NTFS, NTOSKRNL and the Windows 95/98 file system. *NTFS for Win98* provides an external interface that looks like a standard Windows 95/98 file system, while internally it presents an interface to NTFS that looks like the Windows NT/2000 environment. *NTFS for Win98* uses a number of services within NTOSKRNL to help implement this environment. Note that *NTFS for Win98* does not load NTFS or NTOSKRNL unless you have at least one NTFS drive on your system.

4 *Limitations*

Because the Windows 95/98 environment is different than that of Windows NT/2000, the level of NTFS support that *NTFS for Win98* provides is not equivalent to that provided on Windows NT/2000. For example, *NTFS for Win98* does not enforce the Windows NT/2000 security model. All files and directories are accessible, regardless of their security permissions settings. In addition, *NTFS for Win98* is not compatible with Windows 2000's Encrypting file System (EFS). Any files encrypted using EFS will not be accessible under Windows 98 using *NTFS for Win98*.

NTFS for Win98 does not provide access to software-implemented NTFS volume sets, stripe sets or mirrored drives.

5 Recommended Configuration

Do not convert your first partition, or your Windows 95/98 boot partition (the one with \windows on it), to NTFS as there is no support in Windows 95 or Windows 98 for reading NTFS drives during the boot sequence.

For maximum compatibility in dual boot systems, the recommended partition configuration is to maintain a FAT partition as the first partition on the primary drive. This partition should contain Windows 95/98 and should not be used to store applications or data files. The rest of the primary disks, and any other disks that you wish to share between Windows 98 and Windows NT/2000 can be formatted with NTFS or other file system types (FAT16 or FAT32) that are understood by the operating systems from which you wish to access them. Your Windows NT/2000 system directory can be placed on either a FAT or NTFS drive (note that Windows NT 4.0 cannot be placed on a FAT32 drive, nor boot from a FAT32 drive).

Table 5-1 shows a file system compatibility chart that can help you determine which file systems to use for compatibility in your dual boot environment.

	Windows 95	Windows 95/OSR2	Windows 98	Windows NT	Windows 2000
FAT16	●	●	●	●	●
FAT32		●	●	○ ¹	●
NTFS	○ ²	○ ²	○ ²	●	●

● Operating system can boot from the file system

○ Operating system can access the file system, but not boot from it

¹ With Winternals Software's *FAT32 for Windows NT 4.0*

² With Winternals Software's *NTFS for Win98*

Table 5-1

6 *Installation*

Before you run the *NTFS for Win98* installation program, you must have access to a number of files (listed below) from the Windows NT/2000 installation you use to access your NTFS drives. This means that if the files are located on a NTFS drive you will have to copy them to a FAT drive accessible from Windows 98.

During the NTFS for Win98 setup procedure you will be prompted for the location of these files. You may specify either the system directory of a Windows NT/2000 installation (e.g. c:\winnt), or a directory into which you've copied the necessary files. The files that you must make available to NTFS for Win98 are:

NTFS.SYS	this file is located at winnt>\system32\drivers\ntfs.sys
NTOSKRNL.EXE	this file is located at <winnt>\system32\ntoskrnl.exe
AUTOCHK.EXE	this file is located at <winnt>\system32\autochk.exe
NTDLL.DLL	this file is located at <winnt>\system32\ntdll.dll
C_437.NLS	this file is located at <winnt>\system32\c_437.nls
C_1252.NLS	this file is located at <winnt>\system32\c_1252.nls
L_INTL.NLS	this file is located at <winnt>\system32\l_intl.nls

<winnt> designates the system directory of the Windows NT/2000 installation that contains the NTFS driver you normally use to access your NTFS drives.

The setup procedure allows you to assign drive letters to NTFS drives that *NTFS for Win98* mounts. Simply enter a string in the drive-letter selection entry that designates, in order, the drive letters for *NTFS for Win98* to assign. For example, if you want the first NTFS drive mounted to have a drive letter of 'D' and the second to have a drive letter of 'T', you would enter "dt" (without the quotation marks). Note that the entry is case-insensitive. Leaving the entry blank has *NTFS for Win98* assign the first available drive letter to each mounted NTFS drive.

After the setup procedure is complete you are prompted to reboot your computer. The next time you boot the Windows 95 or 98 system on which you installed *NTFS for Win98* you will have access to your computer's NTFS volumes. You may rerun the configuration utility at any time to select different drive letters or a different NTFS file.

7 CHKDSK

NTFS for Win98 includes a scandisk for NTFS drives named NTFSCCHK. In the same way that *NTFS for Win98* creates an NT-like environment for the NTFS driver, NTFSCCHK creates an NT-like environment for the AUTOCHK.EXE (CHKDSK) program of a Windows NT/2000 installation. The files that make up this environment include AUTOCHK.EXE, NTDLL.DLL, and three character mapping files, C_437.NLS, C_1252.NLS, and L_INTL.NLS.

The *NTFS for Win98* setup program adds the execution of NTFSCCHK to your AUTOEXEC.BAT file so that the consistency of your NTFS drives is checked every time you boot into Windows 95/98. You may also run NTFSCCHK from DOS before Windows 95/98 starts, from a DOS-box command prompt, or by selecting the NTFSCCHK icon in the *NTFS for Win 98* program group in the Start menu. When NTFSCCHK runs from AUTOEXEC.BAT and when you select the icon NTFSCCHK runs in read-only mode. See the options below for running NTFSCCHK in repair mode.

In some cases NTFSCCHK will indicate that it cannot lock the specified drive(s). This condition results when applications or Windows has active handles to open files on the NTFS drive for which NTFSCCHK reports the condition. If the applications in question do not close their handles, or Windows keeps open handles, you must reboot the computer and run NTFSCCHK before the drive is accessed by applications or Windows, or reboot into Windows NT/2000 and perform a CHKDSK operation there.

While NTFSCCHK scans a drive that drive will not be accessible. If you click on the drive icon in Explorer you will receive an "access denied" error message. If Explorer is opened to directories on a drive being checked and you attempt to navigate the directories you will receive errors indicating that the directories do not exist.

NTFSCHK's command-line usage is as follows (selecting the NTFSCHK program icon results in a check of all the computer's NTFS drives):

ntfschk [/?] [/s] [/f] [/q] [drive letter: | *]

- /?** Displays NTFSCHK usage.
- /s** This switch has NTFSCHK display the list of detected NTFS drives. Use this command to determine which drive letters correspond to NTFS volumes.
- /f** Unless you specify this flag NTFSCHK runs in read-only mode, where it detects and reports errors but does not correct them. Use this flag to fix drives for which NTFSCHK reports corruption.
- /q** This switch has NTFSCHK perform a quick check of the specified NTFS drive(s) by not setting the NTFS drive "dirty" flag on the disk(s). Thus, NTFSCHK will only check the drive if it is marked as being in a possibly inconsistent state.
- *** Has NTFSCHK check all NTFS drives, or you can specify a specific drive letter (e.g. D:) to check.

8 Advanced Settings

The following Registry configuration settings are used by *NTFS for Win98*. You should only change their default values for trouble-shooting purposes or upon direction from Winternals Software technical support. Certain values may result in poor performance or data loss on NTFS drives. All values reside under HKEY_LOCAL_MACHINE\Software\Winternals\NTFSforWin98. These settings are accessible from the Advanced dialog of the *NTFS for Win98* configuration utility.

Ntfs	Specifies the full pathname of the NTFS.SYS file <i>NTFS for Win98</i> loads.
Ntoskrnl	Specifies the full pathname of the NTOSKRNL.EXE file <i>NTFS for Win98</i> loads.
WriteThrough	If set, <i>NTFS for Win98</i> will immediately write any NTFS disk modifications to disk instead of buffering the operations in the Windows 98 file system cache. Default=0.
ReadOnly	If set, no disk modifications of NTFS drives occur, even though it will appear that they do. Note that performing a large amount of modifications on NTFS drives when this setting is enabled can lead to a crash, since NTFS will eventually encounter disk blocks with information inconsistent with what it thinks it has written. Default=0.
CheckpointInterval	NTFS is a logging file system, meaning that it maintains updates to metadata structures (like directories and the Master File Table) in a log file before the changes have been fully committed to disk. NTFS periodically commits modifications with an operation called a checkpoint. This setting specifies the number of seconds between checkpoints. Default=10.
WritebackInterval	This parameter specifies the period, in seconds, at which <i>NTFS for Win98</i> writes back dirty disk blocks to disk. The longer the interval the better overall performance, but the more data that may be lost in the case of an abrupt system shutdown or crash. Default=1.

9 Technical Support

- ◆ If you encounter a problem while using NTFS for Win98 and wish to receive technical assistance, please visit <http://www.winternals.com/es/support/getsupport.asp> or send e-mail to support@winternals.com
- ◆ To search the Winternals Knowledge Base, find answers to Frequently Asked Questions, or download free updates to this product, please visit our Support pages at <http://www.winternals.com/es/support>
- ◆ Telephone support is not available for NTFS for Win98.