How To Dual-Boot Windows 2000

A dual-boot combination can make a great safety net, especially when users are unsure about upgrading to Windows 2000 because of potential compatibility problems.

By Dave Cook
Journalist and Consultant

Getting any new operating system up and running can be a nerve-wracking affair, let alone installing it alongside an existing platform. And yet running a dual-boot configuration can hold certain advantages. This could be, for example, when users are unsure if their existing hardware and software will continue to work with the new operating system.

This is especially true when moving over to Windows 2000 because it is a one-way upgrade. In other words, Windows 2000 does not include an uninstall program. Reverting to the previous version of Windows is not possible without reinstalling the old operating system and its applications. Thus a dual-boot configuration can be regarded as something of an insurance policy; an escape route back to normality should the upgrade not go as smoothly as one would hope. Just imagine, for instance, installing Windows 2000 only to discover that the tape backup unit refuses to work. With a dual-boot configuration, your users simply restart the computer and load the alternative operating system. The solution is not ideal, of course, but it will suffice until the latest Windows 2000 drivers are acquired.

Considerations

Windows 2000 can be installed as part of a dual-boot or a multiple-boot combination, and with a variety of operating systems. These include Windows 95 or Windows 98 - but not together - and Windows NT 4.0. It can even be installed alongside another member of the same Windows 2000 family. Windows 2000 can also run in a multiple-boot environment containing non-Microsoft products, such as Linux and BeOS. However, in such cases, obtaining a third-party booting utility like PowerQuest's BootMagic is recommended.

Disk Space

Compared to a single-boot configuration, requirements for setting up a dual-boot system are relatively minimal. As one might expect, the biggest drain on resources is disk space, since on its own Windows 2000 requires a 2 GB hard disk with at least 1 GB free. That is considerably more than the amount of free space Windows 98 requires (between 140 MB and 400 MB, depending which features are installed). Windows NT, meanwhile, can get away with a minimum of 117 MB of free disk space.

Partitions

In a dual-boot combination, each operating system should be installed on a separate drive or onto its own disk partition. Failing to install Windows 2000 in this way can result in your users receiving numerous critical and non-critical error messages. Difficulties arise because each operating system installs its own files into certain shared folders. These files may not work under the other operating system. Some typical problem files are located under the Common Files folder, Microsoft Internet Explorer folder, Microsoft Outlook Express folder, the Accessories folder, and the Program Files folder. Error messages may occur in Windows 2000, the existing version of Windows NT 4.0, or Windows 9x. Versions of Windows that are not affected are Windows 3.x, Windows for Workgroups 3.1x, and Windows NT 3.x.

Although under certain conditions Windows 2000 can be installed on the same partition - but in a different folder - to the existing operating system, this type of setup is not recommended. Installing Windows 2000 to a different partition

Update 142:September 2000
Page 3

PC Support *Advisor*
www.itp-journals.com

File: T1216.1
Tutorial:Operating Systems

negates the risk of Setup replacing important files that the previous operating system requires in order to start.

The easiest way to install Windows 2000 as part of a dual-boot combination is to create a new partition beforehand. To this end, I recommend use of a disk-partitioning utility such as PowerQuest's PartitionMagic 5.0 (**www.powerquest.com**) or Partition Commander from V Communications (**www.v-com.com**). The advantage of using a commercial software application over FDISK, the DOS utility, is that it is possible to partition the hard drive without losing any data. While FDISK is readily available to most users, it will destroy the current data in order to create the new partition.

File Systems

Where more than one operating system is installed, the ability to both read from and write to other partitions, though not essential, can make life a whole lot easier. Windows 2000 certainly helps in this respect because it supports FAT, FAT32 and NTFS file systems. NTFS is the recommended file system for Windows 2000. Indeed, there is no alternative if your users wish to take advantage of some of the operating system's most powerful features such as the Encrypting File System, which uses public key technology to encrypt files and folders. The downside to using NTFS is that only Windows 2000 can gain access to files subsequently created on that partition.

Using NTFS in a dual-boot configuration is supported, but such a choice is not usually recommended. This is because Windows 2000 includes several new features, such as disk quotas, encryption, and reparse points - also called mount points or junction points. These new features required changes to the existing NTFS format, which means Windows NT 4.0 may not interpret the version of NTFS included with Windows 2000 correctly. Thankfully, the updated NTFS.SYS driver provided in Windows NT 4.0 Service Pack 4 enables Windows NT 4.0 to read from and write to NTFS volumes or partitions in Windows 2000. Be aware, though, that the new NTFS features found in Windows 2000 are disabled when booting to Windows NT 4.0.

It is important to note, therefore, that the NTFS update for Windows NT 4.0 is provided only to assist users in evaluating and upgrading to Windows 2000. Microsoft does not recommend running a dual-boot configuration between Windows NT 4.0 and Windows 2000 as part of a long-term solution.

Combinations

The trick to setting up a multiple-boot combination to boot Windows 2000, Windows NT and Windows 9x is to install Windows NT first. Windows 9x should be installed next, with Windows 2000 installed last. Alternatively, to create a dual-boot setup with just Windows 2000 and Windows 95, install Windows 95 first so that it cannot overwrite the startup files required to start Windows 2000. When creating a dual-boot configuration of Windows 98 and Windows 2000, either operating system can be installed first.

When Windows 2000 is dual-booted with Windows NT or an early version of Windows 95, the primary partition must be formatted as FAT. For a dual-boot of Windows 2000 with Windows 95 OSR2 or Windows 98, the primary partition can be formatted as FAT or FAT32, with the latter being the preferred choice. Likewise, if both Windows 2000 and Windows 98 require access to a common partition - perhaps a partition holding the My Documents folder - then that partition can be formatted as FAT or FAT32. Again, FAT32 is the preferred option.

FAT32 is likely to have been installed on PCs shipped with OSR2 versions of Windows 95 since December 1996. Note that OSR2 versions of Windows 95 can be identified from the General tab of the System applet in Control Panel - they have a B or C after the 4.00.950 version number. The majority of Windows 98 PCs will almost certainly contain drives that have been formatted to FAT32.

Final Checks

- To eliminate any nasty surprises later, a little further preparation is needed before starting the installation process. Take a full backup of the existing system and have it verified. Disconnect the uninterruptible power supply

Figure 1 - To create a dual-boot configuration with the existing operating system, select "Install a new copy of Windows 2000".

PC Support *Advisor*
www.itp-journals.com

(UPS) if present, and check that the system BIOS is running the most up-to-date firmware version.

● Prior to setting up a dual-boot between Windows NT 4.0 and Windows 2000, ensure Service Pack 4 or later has been installed to the former. Note also that Windows 2000 cannot be installed on a compressed partition - unless the partition is compressed using NTFS. Be aware also that Windows 2000 does not support DriveSpace or DoubleSpace compression technologies found in Windows 95 and Windows 98. While it isn't strictly necessary to uncompress these partitions in a dual-boot configuration, they won't be available when running Windows 2000.

● It is important to ensure that the computer's components are registered on Microsoft's Hardware Compatibility List (HCL). This list is maintained and updated regularly and can be accessed at **www.microsoft.com/hcl**. Microsoft will be in a much better position to offer your organisation support if components are certified.

Installation

To help avoid potential problems, Windows NT users should invoke the Setup utility by running WINNT32.EXE from the command prompt. Windows 9x users should simply insert the Windows 2000 CD in the CD-ROM drive and wait for the Autorun feature to automatically fire up the Setup Wizard.

For the most part, installing Windows 2000 as part of a dual-boot configuration is as straightforward as installing it to a single-boot configuration. There are a couple of points to look out for, however, and these appear early in the installation. For instance, when the Windows Setup screen appears (see Figure 1), you need to specify that you want to "Install a new copy of Windows 2000 (Clean Install)" rather than choosing the "Upgrade to Windows 2000" option. After completing the licence agreement, click the Special Options button and select Advanced Options.

Next, tick the "I want to choose the installation partition during Setup" box, click OK, and then click Next. Setup will copy the installation files to the hard disk and reboot. There will be a brief glimpse of the boot menu, just before you are invited to continue with the installation. The Setup screen now shows all existing partitions, along with any un-partitioned space on the computer. Select the empty partition you created earlier, before starting the installation process. Obviously, in order to avoid a major calamity later, it is extremely important to install Windows 2000 to the correct partition. If this partition is FAT or FAT32, your users will then be given the choice of converting the partition to NTFS.

As discussed earlier, NTFS is not the best choice in a dual-boot combination because it is not fully compatible with Windows NT's version of NTFS. And, since Windows 9x operating systems cannot access NTFS, the best solution all round is to avoid the option to upgrade to NTFS and stick with FAT or FAT32. Setup will then go about detecting the devices installed on the computer. To all intents and purposes, the installation from that point onwards is just like any other.

Boot Menu

Once installation is complete, managing a dual-boot or multiple-boot combination is achieved via a simple set of controls. Basically, these controls take the form of a boot menu, allowing your users to specify which version of Windows is launched at startup by default. If no selection is confirmed then the default version of Windows will load automatically after a set amount of time. Although these settings are configurable, they are buried a little more deeply in Windows 2000 than they are in Windows NT.

To find them, right-click My Computer and choose Properties, click the Advanced tab and then the Startup and Recovery button. Make the selections from the "Default Operating System" drop-down (see Figure 2), and the "Display the list of operating systems for X seconds" box, which will show 30 seconds by default. Shortening the boot waiting time to 10 or 15 seconds will likely be the best option for the majority of your users.

To change or delete the names that appear in the boot menu, use the BOOT.INI

Figure 2 - Use the Windows 2000 Startup and Recovery utility to select the default operating system.

PC Support *Advisor*
www.itp-journals.com

file found in the root folder of the system's bootable partition. However, before editing the file with an application such as Notepad, it is quite likely that its Read-only attribute will need to be removed. This is achieved by right-clicking the file in an Explorer window, choosing Properties and deselecting the Read-only attribute. Remember to turn the Read-only attribute back on once the file has been successfully edited. Editing BOOT.INI is extremely straightforward. To remove Windows 9x from the boot menu, for example, your users would remove the following line (where C: is assumed to be the boot drive letter):

```
C:\="Microsoft Windows"
```

With the line deleted, the system will boot directly to Windows 2000 without the option to boot Windows 9x. Alternatively, your users might wish to disable the countdown timer indefinitely, so that the boot menu is displayed until a selection is made manually. To disable the timer, simply edit BOOT.INI by changing the timeout setting to:

```
timeout=-1
```

Applications

With Windows 2000 up and running, most (but not all) software applications will need to be re-installed in order to update the registry. In cases where partitions are file system compatible, the applications can safely be re-installed to the same directory in which they currently reside. A few applications, such as Paint Shop Pro, for example, should not need to be reinstalled and should continue to function if a shortcut is added to the Windows 2000 Desktop. This can be achieved by opening Windows Explorer, dragging the target's application extension file onto the Desktop with the right mouse button, and selecting "Create Shortcut(s) Here" from the pop-up menu.

If your users use the My Documents folder to store files, they may find it makes sense to point both Windows 2000 and Windows 9x to the same directory. In Windows 2000, for example, simply right-click on the My Documents icon, click on Properties and type in - or browse to - the favoured location. Of course, none of this will be possible if Windows 2000 is installed with the NTFS format. If NTFS is used, all applications and files will need to be installed to the Windows 2000 partition. This wastes considerable disk space since it results in two copies of each application residing on each machine.

Summary

With certain reservations, Windows NT and Windows 2000 can be set up to dual-boot reasonably well together. But, with Windows 2000 being touted as a direct upgrade to NT, most users are likely to regard this combination as nothing more than a short-term solution. Once Windows 2000 is seen to be running smoothly, the general idea will be to get rid of NT as quickly as possible.

A more permanent dual-boot arrangement between Windows 2000 and Windows 98 makes greater sense, especially if all of the partitions have been formatted as FAT32. Indeed, there is every reason to expect a dual-boot combination of this nature to run trouble-free for some considerable time.

Further Information

Microsoft hardware compatibility list
www.microsoft.com/hcl

Latest application compatibility information
www.microsoft.com/windows2000/compatible

Microsoft Windows 2000 technical library
www.microsoft.com/windows2000/library

Important BIOS compatibility issues
www.microsoft.com/windows2000/upgrade/compat/biosissue.asp

PartitionMagic 5.0 from PowerQuest
www.powerquest.com

Partition Commander from V Communications
www.v-com.com

PCSA

Copyright ITP, 2000

Update 142:September 2000
Page 6

PC Support *Advisor*
www.itp-journals.com

File: T1216.4
Tutorial:Operating Systems