Before the Installation

Windows NT Versions and Platforms Supported

Several versions of Diskeeper are available:

Diskeeper 4.0 for Windows NT Server is supported on version 4.0 of the Windows NT Server operating system. It can also be installed on Windows NT Workstations.

Diskeeper 4.0 for Windows NT Workstation is supported on version 4.0 of Windows NT Workstation.

An earlier version, Diskeeper 1.0, is available on request for Windows NT 3.5 and 3.51 systems.

Diskeeper 4.0 runs on the following Windows NT computer platforms:

- Intel x86 platform (including Pentium and compatible CPUs from other manufacturers)
- Digital Alpha platform

File Systems Supported

Diskeeper supports the NTFS and 16-bit FAT file systems, but the 12-bit FAT file system is not supported.   (The 12-bit FAT file system is used on FAT partitions smaller than 16 megabytes in size, such as floppy disks.) Also, NTFS partitions formatted with a cluster size larger than 4 kilobytes are not supported.

Disks Supported

Diskeeper supports a wide range of SCSI and IDE disks, including:

- Primary Partitions
- Extended Partitions
- Logical Drives
- Volume Sets
- RAID Arrays

Resource Requirements

The disk space requirements for Diskeeper vary, depending on the computer platform upon which it is installed. The table below lists the disk space requirements by platform.

Platform	Space Required
Intel x86	2 megabytes or less
Alpha	4 megabytes or less

Installation Overview

Diskeeper is installed by the **SETUP.EXE** program supplied on the Diskeeper CD-ROM.   The **SETUP.EXE** program:

- confirms that you have Administrator privileges.
- determines which version of Windows NT you are running.
- checks for sufficient space on the disk for the installation.
- recognizes and will install over previous versions of Diskeeper.
- copies the Diskeeper files to the destination directories, updates the Windows NT Registry, starts the Diskeeper service, and creates a new Program Group for Diskeeper.
- offers you the option to register Diskeeper at Executive Software's Web site.

Installation Procedure

Please Note: If you have previously installed Diskeeper Lite on your computer, Executive Software recommends that you uninstall it before proceeding with the installation of Diskeeper 4.0.   If, however, you decide to leave Diskeeper Lite on your system, be aware that uninstalling Diskeeper Lite after the installation will remove certain Windows NT Registry entries used by Diskeeper 4.0, and you will need to re-install Diskeeper 4.0.   Use the Add/Remove Programs applet in Control Panel to uninstall Diskeeper Lite.

To install Diskeeper, you must be logged into an Administrator account.

Click here for more information.

Installation Procedure Steps

1 Insert the Diskeeper CD-ROM into the appropriate drive on your computer.

2 The Windows NT 4.0 AutoPlay feature automatically determines the computer platform you are using and begins installing the correct version of Diskeeper.   If you have disabled the AutoPlay feature, perform these steps:

   a) From the Windows NT Explorer, expand the directory folders on the Diskeeper CD-ROM.   You will see directory folders for these platforms:

   X86 — for the Intel PC platform (includes Pentium)

   Alpha — for the Digital Alpha platform

   b) Double click **SETUP.EXE** in the directory folder representing your computer platform.   This causes the Executive Software Setup Window to be displayed.

3 Click **Next** when the welcome message appears.

4 As an option, you can choose the destination location for the Diskeeper files.   By default, Diskeeper will be installed in \ExecSoft\Diskeep on your Windows NT boot partition.   To choose another disk partition or directory, click **Browse**.   If you choose another partition or directory, click **OK** to accept the new destination location.   Any valid local disk drive and directory names are acceptable.   If the directory you specify does not exist, a new directory will be created by the Setup utility.

5 After accepting or editing the path name, click **Next**.

6 After a short period of copying files, the Diskeeper Program Group is created and the installation is complete.

After the Installation

Registering Diskeeper

After the Diskeeper installation is complete, you are given the option to register your Diskeeper purchase. You can register Diskeeper at the Executive Software Web site, or FAX the registration card included in the Diskeeper package to Executive Software.   Both methods provide a fast, efficient way to register Diskeeper.

The online Web-based registration option requires that you have a default Web browser or navigator installed on your computer.

Be sure to register your Diskeeper purchase to receive the free 90 days of telephone support included with Diskeeper.

A Note about Installing Service Packs

Since Diskeeper utilizes mechanisms built into Windows NT 4.0 that allow the safe movement of files on a disk that is actively being accessed by users, there is no need to upgrade Diskeeper each time you install a new Windows NT Service Pack upgrade.

However, Executive Software recommends uninstalling Diskeeper before you install the Windows NT Service Pack.   This ensures that Diskeeper Registry entries are not modified by the Service Pack upgrade.   See Uninstalling Diskeeper for more information about uninstalling Diskeeper.

A Note about Repairing Your Windows NT System

Performing an emergency repair of a Windows NT system can possibly change or disable certain system information or services.   For this reason, it may be necessary to reinstall Diskeeper after repairing your Windows NT system.

About the Diskeeper Service

Diskeeper 4.0 is primarily designed as a "Set It and Forget It" disk defragmenter.   In order to accomplish this goal, it creates a Windows NT service.   The service allows Diskeeper to run in the background while other applications are running.   Diskeeper can defragment your disks whether you are logged on to your computer or not.

After installation, the Diskeeper service starts automatically each time your Windows NT system is booted.   The Diskeeper service runs all the time, whether or not defragmentation is occurring.   This service consumes negligible system resources, and in most cases will never need to be disabled.

Setting Up the Application Event Log

Diskeeper messages are placed in the Windows NT Application Event Log.   By default, this log is 512 kilobytes in size, and is set to overwrite events older than 7 days old.   Diskeeper may quickly fill the log file if these default settings are used.   To prevent this, perform these steps to change the size and overwriting characteristics of the Application Event Log:

1   From the Windows NT Start button, choose Programs, then the Administrative Tools Program Group.

2   In the Administrative Tools Program Group, choose the Event Viewer.

3   In the Event Viewer, open the Log menu and choose the Log Settings option.

4   In the Event Log Settings dialog box, perform these steps:

   n   Set the Change Setting to Application Log.
   n   Set the Maximum Log Size to 2048 kilobytes.
   n   Enable the Overwrite Events as Needed option.
   n   Choose OK to return to the Event Viewer Log.

Installing Diskeeper using SMS

Diskeeper can be installed as a distributed installation using Microsoft's System Management Server (SMS). Click here for step by step instructions on how to install Diskeeper using SMS.

Note: By default, when using SMS, Diskeeper will install to C:\ExecSoft\Diskeep.   To install on a different drive or in a different directory, perform one of these two actions:

§   Share the directory where the Diskeeper installable files reside, then log into the target machine and run **SETUP.EXE** from the target machine as described in the Diskeeper for Windows NT User's Guide; or,

§   Edit the **SETUP.ISS** file and change the line `szDir=C:\ExecSoft\Diskeep` to point to the drive and directory where you want to install Diskeeper.

Installing Diskeeper using SMS Steps

1. Insert the Diskeeper distribution media into the appropriate drive on your computer.   Using the Windows NT Explorer, you will see these subdirectory folders:

    X86 — for the Intel PC platform (includes Pentium)

    Alpha — for the Digital Alpha platform

2. Select the appropriate directory for the platform upon which you want to remotely install Diskeeper.

3. Copy the selected Diskeeper files into a directory that can be accessed by all the servers which will be distributing the Diskeeper package.

4. From the SMS Administrator, open the Packages window.   Press <Ctrl-N> to create a new package.

5. Click **Import** and import the Product Definition File, **DKNT.PDF**, from the appropriate Diskeeper source directory.

6. Click **Workstations**.

7. Click the ellipsis (**...**) button next to the Source Directory window.

8. Select the directory into which you copied the Diskeeper files and click **OK**.

9. Click **Close**, then click **OK** to create the package.

10. Drag the package to the target machine(s) in the Sites window of the SMS Administrator.

11. In the Job Details window, select Install as the Workstation command.

12. Click **OK** to close the Job Details window.

13. As an option, enter any comments you want in the Comments dialog box.

14. Click **OK** to send the package to the target machine(s).

Uninstalling Diskeeper

Follow these steps to remove Diskeeper from your computer:

1 From Control Panel, double click **Add/Remove Programs**.
2 Click the Install/Uninstall tab.
3 Highlight **Diskeeper**.
4 Click **Add/Remove**. This removes the Diskeeper program files and registry entries from your computer.   In most cases, the Diskeeper installation directory will not be removed.
5 Manually delete the Diskeeper installation directory if it exists.

Analyzing Fragmentation

Diskeeper can perform a comprehensive analysis of the fragmentation on your partitions.   The analysis is shown in either a graphic or a text display.   The graphic display shows different-colored areas representing system files, paging files, fragmented files, contiguous files, directories, and free space.   The text display shows useful information about the extent of fragmentation on a partition.

Click here to see an example of the graphic fragmentation analysis display.

Click here to see an example of the text fragmentation analysis display. After installing Diskeeper, you are ready to start Diskeeper and begin defragmenting your disk partitions. In order to see the actual gains from defragmentation, analyze the condition of your partitions *before* you begin defragmenting them. By reviewing the graphic and text displays both *before* and *after* running Diskeeper, you will be able to <u>see</u> the actual reduction of file fragmentation.

Seeing Results

Especially when using Diskeeper for the first time, you may want to see the results of defragmenting your partitions.   Diskeeper provides several methods by which you can do this.

In order to see the effectiveness of Diskeeper, it is important to first analyze the fragmentation on your partitions *before* defragmenting them.   This is easily done by double clicking the Analyze icon in the disk tree. Then, after running the analysis, save the analysis results using the Save button in the <u>Text View</u> display.

After saving the analysis results, defragment your partitions by double clicking on a Defragment icon in the disk tree.   Running Diskeeper in the higher-priority "Manual Defragmentation" mode ensures your partitions are defragmented quickly.   Once the defragmentation is complete, re-analyze your partitions as you did before defragmenting them.   (Remember to save the results to a different file name than the "before" results, to avoid overwriting the earlier analysis results.)

Also, Diskeeper can display a pop-up summary screen each time it is run indicating the general state of fragmentation on your partition. This optional screen can be enabled or disabled from the Options menu. By default, the summary screen is enabled.

By comparing the "before and after" analysis results, you can see the effectiveness of Diskeeper.   Now, if you set and start scheduled "Set It and Forget It" defragmentation jobs for your partitions, Diskeeper can maintain the defragmented state of your partitions automatically in the background, with no further intervention from you!

Manual Defragmentation Mode

Diskeeper is designed to be operated in three ways − the Manual Defragmentation   and Set It and Forget It modes, which run while your disk partitions are on-line and available to other applications and users, as well as the Boot-Time Defragmentation mode.   The Boot-Time Defragmentation mode runs only when you re-boot your computer.

The Manual Defragmentation mode allows you to directly control Diskeeper operation.   You have direct control over which partitions are defragmented, when defragmentation is started and stopped, and the priority at which Manual Defragmentation jobs run.

There are several ways by which to manually start Diskeeper, but the most direct method is to simply double click the Defragment icon corresponding to the partition you want to defragment.   Alternatively, click on a Defragment icon, then press the Enter key.   You can run more than one manual defragmentation job at the same time.

To stop a manual Diskeeper job, first highlight the Defragment icon for the partition you want to stop defragmenting, then either click **Stop** or select the Stop option from the Defragment menu.

If you exit from Diskeeper (or even log off your computer) while a manual defragmentation job is running, the job will continue running until it is complete.

By default, manual defragmentation jobs are run at "Normal" priority, the mid-level Windows NT priority. Because of this, the performance of tasks running on your computer other than the defragmentation job can be impacted.   As an option, you can change the priority at which Diskeeper runs for manual defragmentation jobs. To do this, select the Priority option from the Options menu.   Lowering the priority of Diskeeper jobs can help speed the performance of other tasks on your system running at the same time, but can cause Diskeeper to take longer to defragment your partitions.

Click here for more information about setting the Diskeeper priority.

Set It and Forget It Mode

Diskeeper is designed to be operated in three ways --- the Set It and Forget It and Manual Defragmentation modes, which run while your disk partitions are on-line and available to other applications and users, as well as the Boot-Time Defragmentation mode.   The Boot-Time Defragmentation mode runs only when you re-boot your computer.

The Set It and Forget It mode allows Diskeeper to run automatically in the background while users and other processes are active on the system.

To run Diskeeper in the Set It and Forget It mode, first create a schedule specifying the times Diskeeper either will or will not be allowed to run on a specific partition, then start the scheduled defragmentation job.   After a defragmentation schedule is created for a partition, Diskeeper will follow that schedule until you explicitly stop it.   The defragmentation job will run as scheduled, whether you are logged onto the computer or not.   Also, multiple Set It and Forget It defragmentation jobs can be run at the same time on separate partitions.

To stop a Set It and Forget It Diskeeper job run, first highlight the icon for the partition you want to stop defragmenting, then either click **Stop** or select the Stop option from the Defragment menu.   Or, you can open the Drive Scheduler dialog box from the Set It and Forget It menu, highlight the partition for which you want to stop the schedule, then click **Stop**.

If you exit from Diskeeper (or even log off your computer) while a Set It and Forget It job is running, the job will continue running until the current scheduled run is complete.   It will then be re-scheduled to run at the next specified run time.

By default, Set It and Forget It defragmentation jobs are run at the lowest Windows NT priority.   Because of this, Set It and Forget It jobs should have a minimal impact on other tasks that are running at the same time.   As an option, you can change the priority at which Diskeeper runs for Set It and Forget It jobs.   To do this, select the Priority option from the Options menu.   Raising the priority of Diskeeper jobs can slow the performance of other tasks on your system running at the same time, but can enable Diskeeper to defragment your partitions more quickly.

Click here for more information about setting the Diskeeper priority.

Boot-Time Defragmentation Mode

Diskeeper is designed to be operated in three ways --- the "Boot-Time Defragmentation" mode, which runs only when you re-boot your computer; as well as the Set It and Forget It and Manual Defragmentation modes, which run while your disk partitions are on-line and available to other applications and users.

Running during boot-time, the Boot-Time Defragmentation feature:

§   Defragments and consolidates directories into a single location

§   Defragments paging files

This is done at boot-time, since directories and paging files are objects that cannot be defragmented while the partition is being accessed by other applications or users.

By its nature, Windows NT allows directories to be written into random locations.   This, in effect, breaks up the available pieces of free space on the partition.   By grouping all the directories into a single location on a partition, larger areas of contiguous free space become available.   As a result, new files are more likely to be written to the partition in a contiguous manner.   This also helps make Diskeeper more effective when it is run in either the Set It and Forget It or Manual Defragmentation modes. The same holds true for fragmented paging files.   By defragmenting paging files, larger areas of contiguous free space become available for new or modified files.

Note, however, that there are two directories that Windows NT expects to find in a particular physical location on the partition.   For this reason, the Diskeeper Boot-Time Defragmentation operation excludes these two directories and does not move them.   The directories are \Recycler and \Recycled.   Because these two directories cannot be moved, the Boot-Time Defragmentation will likely still leave one or two directories that are not consolidated with the rest of your directories.

The Boot-Time Defragmentation feature relies on finding enough contiguous free space into which all the directories for the paging file will fit.   For this reason, you should run Diskeeper in one of its online modes before running the Boot-Time Defragmentation feature.

In most cases, you should run the Diskeeper Boot-Time Defragmentation shortly after the first time you use Diskeeper on a partition (Diskeeper should run at least once to create a contiguous free space to move the directories into), or after any operation (such as installing a new application) that creates multiple directories. By moving all the directories together, you create more contiguous free space for file defragmentation.   After running the Boot-Time Defragmentation, use either the Set It and Forget It or Manual Defragmentation modes to keep the partition defragmented.

Click here for information about setting a partition for Boot-Time Defragmentation.

Overview of Diskeeper 4.0

§ Diskeeper 4.0's major enhancement over its predecessor, Diskeeper 3.0, is that it permits paging file defragmentation. This greatly increases the effectiveness of disk defragmentation.

§ Two versions of Diskeeper 4.0 are available − one for Windows NT Server and one for Windows NT Workstation.   The Server version defragments local and network disk partitions, and the Workstation version defragments local partitions only.

§ Diskeeper for Windows NT Server can be installed and run on Windows NT Workstations, allowing you to control defragmentation of the partitions on all the computers on your network from either a single Server or Workstation.

§ Diskeeper 4.0 is supported on Windows NT 4.0.   It cannot be run on earlier versions of Windows NT. Diskeeper 1.0 is available for Windows NT 3.5 and 3.51.

§ Diskeeper supports the NTFS and 16-bit FAT file systems, but the 12-bit FAT file system is not supported. (The 12-bit FAT file system is used on FAT partitions smaller than 16 megabytes in size, such as floppy disks.)

§ In its on-line, Set It and Forget It and Manual Defragmentation modes, Diskeeper cannot defragment files on NTFS partitions with a cluster size greater than 4K (4096 bytes) in size.   This is due to a limitation in Windows NT.   You must have Administrator privileges enabled before running Diskeeper.

§ With Diskeeper, you can analyze the fragmentation on a partition (with a graphic or text display), as well as defragment the partition.

§ More than one analysis or defragmentation operation can be performed at a time.   You can analyze or defragment partitions independently of each other.

§ When running Diskeeper in the on-line mode, you can run other tasks while defragmentation is occurring.

§ When Diskeeper runs at higher priority levels, performance of other active processes will likely be impacted.

§ When Diskeeper runs at lower priority levels, defragmentation may take longer, since Diskeeper "backs off" for other higher-priority processes, including screen savers.

§ Diskeeper runs through the files on the partition in several "stages" during each defragmentation run.   The number of stages varies, depending on the number of files and the degree of fragmentation.

§ In the on-line mode, Diskeeper runs as a Windows NT Service and it optionally logs useful defragmentation information into the Windows NT Application Event Log.

§ Diskeeper can be uninstalled in the standard manner using the Add/Remove Programs applet in the Windows NT Control Panel. Click here for information about uninstalling Diskeeper.

Theory of Operation

As used in reference to Windows NT, disk fragmentation means two things:

- a condition in which pieces of individual files on a partition are not contiguous, but rather are broken up and scattered around the partition; and
- a condition in which the free space on a partition consists of little pieces of space here and there rather than a few large free spaces.

The effects of excessive fragmentation are twofold as well:

- file access takes longer because a file must be collected in pieces here and there, requiring several disk accesses instead of just one; and
- file creations take longer because space for the file must be allocated in little pieces here and there instead of just one contiguous allocation.

Before the introduction of Diskeeper, there was no method for completely correcting the problems of file and free space fragmentation on Windows NT computers.

In designing Diskeeper for Windows NT, the following goals were established:

- The product must be completely safe to use.
- It must improve Windows NT system performance.   It is not designed to make the disk look "pretty" --- it's designed to improve disk performance and, as a result, overall system performance.
- It should process live disks without interfering with user access to files.
- It should run without operator intervention.
- It must defragment all possible files and consolidate free space into the smallest possible number of large spaces.

Executive Software

Executive Software, founded by its Chairman and CEO Craig Jensen, was incorporated in 1981.   In 1986, Diskeeper for VAX/VMS was introduced, establishing Executive Software as the leader in defragmentation products for the corporate marketplace.

A fundamental aspect of the company's corporate purpose has been to help Data Center Managers solve performance problems.   Superior technical capability coupled with meticulous market research fueled rapid growth for Executive Software, and resulted in a high degree of customer satisfaction.

Executive Software has grown from five people in 1986 to over a hundred today, with headquarters in California and branch offices throughout the world.   The expansion of the company and the popularity of its products demonstrate a successful implementation of the company's purpose and the degree of technical and administrative capability that backs it up.

## Click here to visit Executive Software's Web site:

{button Visit Executive Software,EF(`Connect.exe',"http://www.execsoft.com",1)}

Note: It is necessary for you to have a default Web browser or navigator defined on your computer before clicking on the button.

Using the Diskeeper Interface

The Diskeeper interface contains pull-down menus and a toolbar.   Many of the functions offered are the same on the menus and toolbar.

Click on the different areas of the Diskeeper display shown below for information about that section of the Diskeeper display.
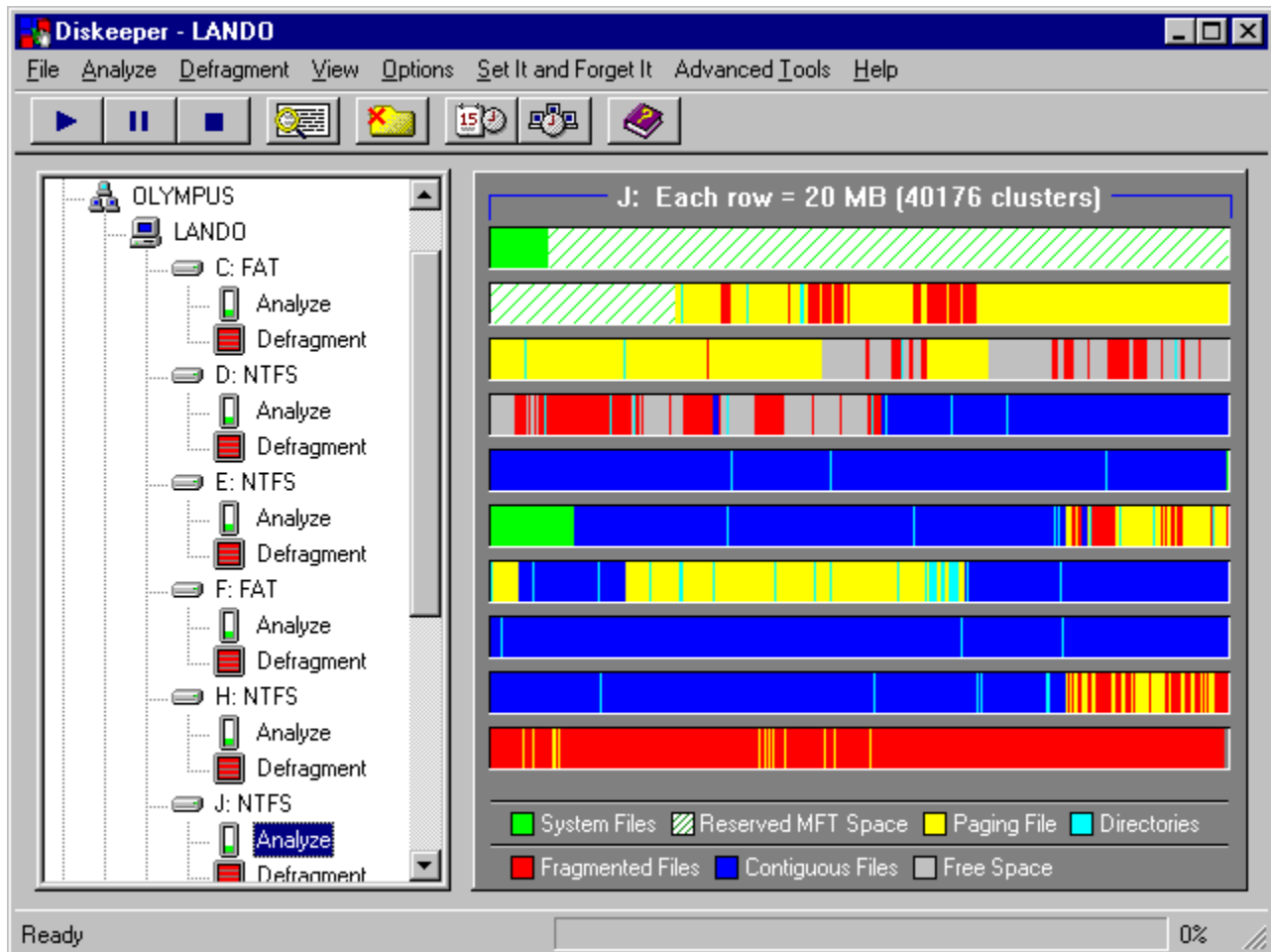
Menu Options

Diskeeper has these menu options:

 File Menu

 Analyze Menu

 Defragment Menu

 View Menu

 Options Menu

 Set It and Forget It Menu

 Advanced Tools Menu

 Help Menu

Toolbar Options

The Diskeeper toolbar offers these options:

Go Button

Pause Button

Stop Button

View Text Button

File Exclusion List Button

Partition Scheduler Button

Network Scheduler Button

Help Contents Button

Go Button

Click **Go** ▶ in the Diskeeper toolbar to begin either a fragmentation analysis or the "Manual Defragmentation" of the selected partition.

Pause Button

Click **Pause** in the Diskeeper toolbar to temporarily pause a fragmentation analysis or the "Manual Defragmentation" of the selected partition.

Stop Button

Click **Stop** in the Diskeeper toolbar to stop a fragmentation analysis or the "Manual Defragmentation" of the selected partition.

View Text Button

Click **View Text** to display a text view of either a fragmentation analysis or the defragmentation of a partition.   The text view of a Diskeeper defragmentation job can only be shown after the job has completed.
[Click here](#) to see an example of the fragmentation analysis text display.

File Exclusion List Button

Click **File Exclusion List** to create a list of files or directories you want to be excluded from being defragmented.

[Click here](#) to see an example of the file exclusion list dialog box.

Setting An Exclusion List

Diskeeper exclusion lists allow you to specify files and directories that will not be allowed to be processed by Diskeeper. For example, you might not want to defragment temporary files that will soon be deleted. When you choose the Exclusion List button or menu option, the window shown below appears. Click on the various options shown in the window below for more information about the options. **Note**: Wildcard file specifications such as ***** or **?** are not allowed.
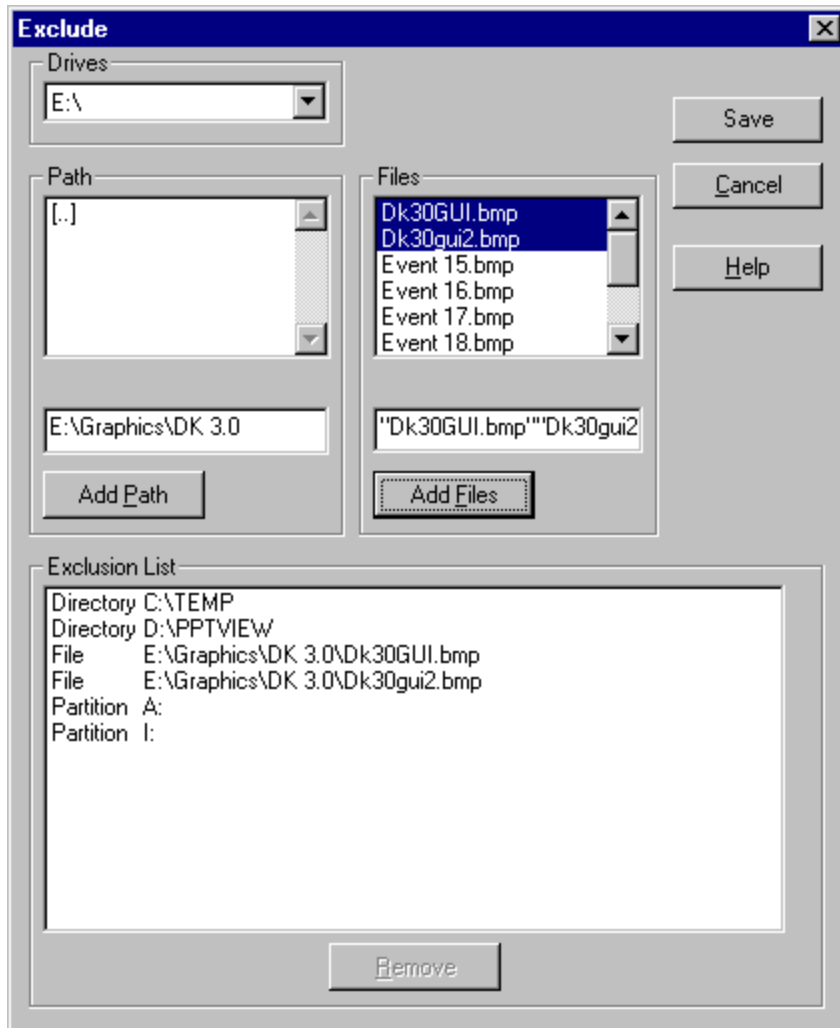
Files

Use this section of the Exclusion List window to choose specific files (by name) to be excluded from defragmentation.   Choose the name of the file to be excluded, then click Add Files to add the file to the exclusion list.

Path

Use this section of the Exclusion List window to choose specific partitions or directories to be excluded from defragmentation.

Select a directory by highlighting it, then click Add Path to add the directory to the exclusion list.

When a directory folder is added to the exclusion list, any subdirectories below the directory in the tree are also excluded.

Drives

Use this section of the Exclusion List window to choose the disk partition from which you want to exclude files or directories.   To exclude an entire partition, highlight the partition name in this section and click Add Path.

Add Files Button

Click **Add Files** to add the selected file(s) to the Diskeeper exclusion list.

Add Path Button

Click **Add Path** to add the selected directory path to the Diskeeper exclusion list.

Exclusion List Box

This dialog box shows the files, directories, and partitions that will be excluded from defragmentation.

Remove Button

Click **Remove** to remove specific files, directories, or partitions from the Diskeeper exclusion list.   To remove an item from the list, highlight the item by clicking on it in the Exclusion List Box and click **Remove**.

File List

This section of the Exclude Files dialog box lists the files matching the specification shown in the File Name edit box.

Directory Folder List

This section of the Exclude Files dialog box lists the directory folders in the selected partition.

Save Button

Click **Save** to save the exclusion list and return to Diskeeper.

Cancel Button

Click **Cancel** to cancel any changes you have made to the Diskeeper exclusion list and return to the opening Diskeeper screen.

Help Button

Click **Help** for context-sensitive help about the Diskeeper file exclusion list option.

Partition Scheduler Button

Click **Partition Scheduler** in the Diskeeper toolbar to create a defragmentation schedule for one or more specific disk partitions.   With the Windows NT Server version of Diskeeper, you can create defragmentation schedules for any computer on your network that is also running Diskeeper.

Click here to see an example of the Set It and Forget It Partition Scheduling dialog box.
Use a defragmentation schedule to specify times when "Set It and Forget It" defragmentation jobs will be forced to run, or times they will not be allowed to run.

Schedules only affect "Set It and Forget It" defragmentation jobs.   Any active defragmentation job previously started on a partition will complete.   After any previously started jobs complete, the new schedule takes effect.

When you use the Partition Scheduler, always select one or more partitions in the Partition List box *before* clicking on any of the other Partition Scheduler controls.   To select more than one partition to schedule, hold the <Ctrl> key while clicking on the partitions listed in the Schedule box that you want to schedule.   Or, you can hold the <Shift> key to select a continuous list of partitions in the Schedule box.

Note that to set or alter a run schedule on remote computers on your network (with Diskeeper for Windows NT Server), you must have sufficient permissions to edit a file in the Diskeeper directory on the remote computer. See Troubleshooting Network Connections for more information.

Network Scheduler Button

Please note: This option is only available in the Windows NT Server version of Diskeeper.

Click **Network Scheduler** [■] in the Diskeeper toolbar to create a defragmentation schedule for all the disk partitions on one or more specific computers, workgroups, or domains on your network.

Click here to see an example of the Set It and Forget It Network Scheduling dialog box.
Use a defragmentation schedule to specify times when "Set It and Forget It" defragmentation jobs will be forced to run, or times they will not be allowed to run.

Schedules only affect "Set It and Forget It" defragmentation jobs.   Any active defragmentation job previously started on a partition will complete.   After any previously started jobs complete, the new schedule takes effect.

When you use the Network Scheduler, always select one or more computers, workgroups, or domains in the Machine List box *before* clicking any of the other Network Scheduling controls.   To select more than one item to schedule, hold the <Ctrl> key while clicking on the computers, workgroups, or domains listed in the Machine List box that you want to schedule.   Or, you can hold the <Shift> key to select a continuous list of items in the Machine List box.

Note that to set or alter a run schedule on remote computers on your network (with Diskeeper for Windows NT Server), you must have sufficient permissions to edit a file in the Diskeeper directory on the remote computer. See Troubleshooting Network Connections for more information.

Also note that you cannot use the Network Scheduler to schedule defragmentation on the computer you are currently connected to.   Use the Partition Scheduler to create a schedule for any computer you are currently connected to.

Scheduling Diskeeper

A number of Diskeeper scheduling options exist.   You can specify separate defragmentation schedules for individual partitions, or you can create a single schedule for more than one partition.

A defragmentation schedule specifies the times or days of the week that Diskeeper will (or will not) be allowed to run.

With the Windows NT Server version of Diskeeper, you can create defragmentation schedules for other computers on your network (if they are also licensed to run Diskeeper).   Diskeeper for Windows NT Server even allows you to create defragmentation schedules for <u>all</u> the partitions on individual computers on your network.

<u>Click here</u> for information about creating defragmentation schedules for individual partitions.

<u>Click here</u> for information about creating defragmentation schedules for <u>all</u> the partitions on your network.

Partition Scheduler

When you click **Partition Scheduler** or select the Partition Scheduler menu option, the window shown below is displayed.

Click on the various options shown in the window below for more information about the options.
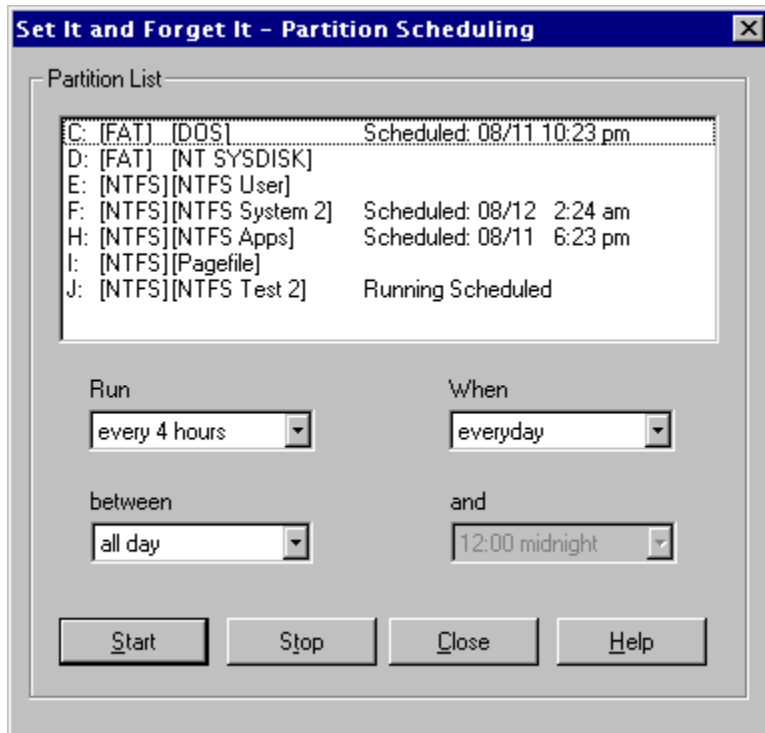
Network Scheduler

Please note: This option is only available in the Windows NT Server version of Diskeeper.

When you click **Network Scheduler** or select the Network Scheduler menu option, the window shown below is displayed.   Click on the various options shown in the window below for more information about the options.
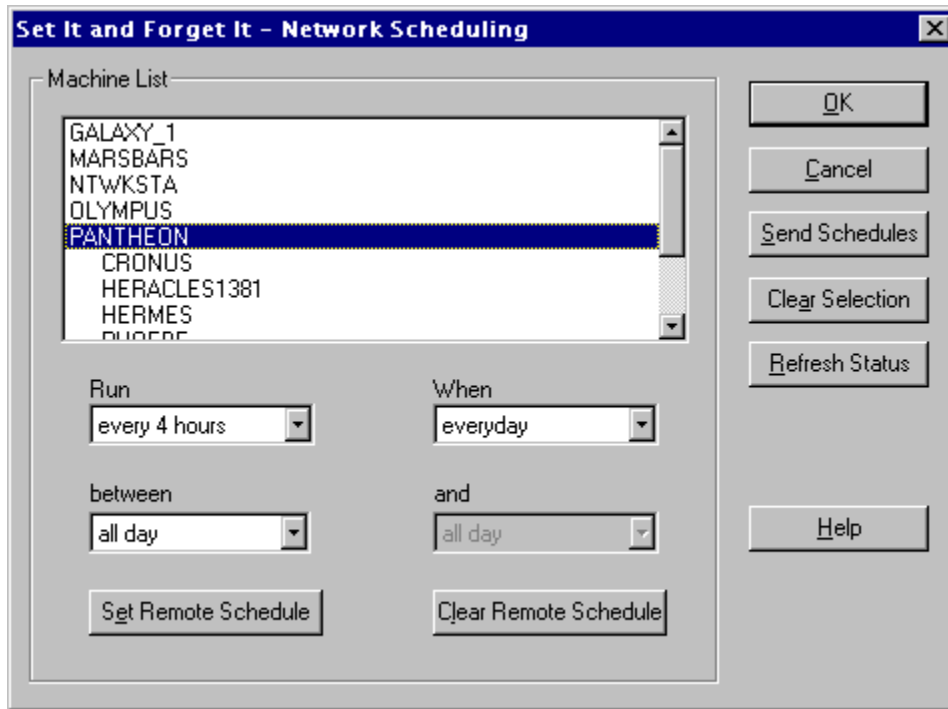
The scheduling of remote computers is accomplished by the Network Scheduler, a feature exclusive to Diskeeper.   This feature allows you to easily set the same "Set It and Forget It" schedule for <u>all</u> the partitions on one or more computers at a time.

To fully use this feature, it is important to understand the method by which Diskeeper creates and controls defragmentation schedules on remote computers.   When you create a schedule for a computer, Diskeeper stores all the necessary scheduling information in a control file (Diskeep.ctl) on the computer for which the schedule was created.   Then, the Diskeeper Service periodically checks the control file to determine whether to start the Diskeeper defragmentation engine on that computer.

The Network Scheduler is a unique feature of Diskeeper (Server version), without which it would be necessary for you to connect individually to each computer you wanted to schedule, then specify the schedule(s) for each of the computer's partitions.   This action would update the Diskeeper control file on each computer.   Not an easy task if you have a few hundred (or thousand) computers on your network!

In the Server version of Diskeeper, the Network Scheduling Engine performs the work of updating the Diskeeper control files on one or more remote computers, without the need for you to individually connect to each computer.   This is the sequence of events:

§   First, the scheduling information for any selected computers is stored on the local computer from where you are creating schedules.   This information is stored in the \NetScheduler folder under the folder where you installed Diskeeper.   Individual files are written to this folder for each computer on which you schedule Diskeeper to run.

§   Next, the Network Scheduling Engine is started, running as a separate process.   The Network Scheduling Engine checks all of the machine-specific scheduling information files on the local computer each time the engine is started.   If any of the files are new or changed since the last time the engine was run, it connects to each respective computer and sends the new or changed information to the Diskeeper control file on the remote computer(s).

§   Then, when the Diskeeper Service on each of the individual remote computers checks its control file, it begins

running as specified by the schedule.   The Diskeeper Service checks its control file once a minute.

Note that to set or alter a run schedule on remote computers on your network (with Diskeeper for Windows NT Server), you must first connect to the remote computer via the tree view in the Diskeeper display. Also, you must have sufficient permissions to edit a file in the Diskeeper directory on the remote computer.   See Troubleshooting Network Connections for more information.

Also note that you cannot use the Network Scheduler to schedule defragmentation on the computer you are currently connected to.   Use the Partition Scheduler to create a schedule for any computer you are currently connected to.

Partition List

Use this section of the Partition Scheduler display to specify one or more disk partitions for which you want to establish a defragmentation schedule.

Always select the disk partition(s) for which you are specifying a schedule *before* clicking on any of the other Partition Scheduler controls.

Any defragmentation job previously started on a partition will complete the current run through the partition before the new run schedule takes effect.

The Partition List section of the Partition Scheduler dialog box lists the partitions detected on the computer you are currently connected to, and shows the partitions that are actively being defragmented or that are scheduled for defragmentation by Diskeeper.   This display also shows the scheduled time for the next defragmentation run for each scheduled partition.

Run

Use this section of the Partition Scheduler display to specify how often Diskeeper should run on the selected partitions.   You can specify any of these run frequencies:

> One Time
> Continuously
> Every 2 hours
> Every 4 hours
> Every 8 hours
> Every 12 hours
> Every 24 hours
> Every 48 hours
> Every 72 hours

When

Use this section of the Partition Scheduler display to specify days the Diskeeper job will (or will not) be allowed to run on the selected partitions.   You can specify any of these time periods to control when Diskeeper is allowed to run:

Everyday	Except Everyday
Weekends	Except Weekends
Weekdays	Except Weekdays
Mondays	Except Mondays
Tuesdays	Except Tuesdays
Wednesdays	Except Wednesdays
Thursdays	Except Thursdays
Fridays	Except Fridays
Saturdays	Except Saturdays
Sundays	Except Sundays

Between

Use this section of the Partition Scheduler display to specify the beginning of a time period the Diskeeper job will (or will not) be allowed to run on the selected partitions.   You can specify any of these time periods to specify the beginning of a Diskeeper schedule period:

     All Day

     12:00 midnight through 11:00 P.M. in one hour increments

And

Use this section of the Partition Scheduler display to specify the end of a time period the Diskeeper job will or will not be allowed to run on the selected partitions.   You can specify any of these time periods to specify the end of a time period Diskeeper will (or will not) be allowed to run:

12:00 midnight through 11:00 P.M. in one hour increments

Start Button

Click **Start** to accept the specified run schedule for the selected partitions.   You must click **Start** for each schedule you specify.

Any defragmentation job previously started on a partition will complete the current run through the partition before the new schedule takes effect.

Stop Button

Click **Stop** to stop a scheduled Diskeeper defragmentation job and clear the schedule for the selected partitions.

Close Button

Click **Close** to leave the Partition Scheduler window.

Click Start *before* clicking **Close** to accept a schedule you have specified.

Do not click **Start** if you don't want to accept the schedule you have set.

Help Button

Click **Help** to view help information about using the Diskeeper in the "Set It and Forget It" mode.

Help Contents Button

Click **Help Contents** to activate the Diskeeper Help system.   You knew that already, right?

Machine List

The Machine List section of the Network Scheduler dialog box lists the computers, workgroups, and domains detected on your network, and shows the scheduling status of each.

Use this section of the Network Scheduler display to specify one or more computers, workgroups, or domains for which you want to establish the same defragmentation schedule on all partitions.

Double click any domain or workgroup shown in the Machine List to display the computers within that group. (Keep in mind, however, that you can also schedule entire domains or workgroups.)   To select more than one item to schedule, hold the <Ctrl> key while clicking on the computers, workgroups, or domains listed in the Machine List box that you want to schedule.   Or, you can hold the <Shift> key to select a continuous list of items in the Machine List box.

Always select the computer(s) for which you are specifying a schedule *before* clicking on any of the other Set It and Forget It dialog boxes.

Run

Use this section of the Network Scheduler display to specify how often Diskeeper should run on all the partitions on the selected computers.   You can specify any of these run frequencies:

> One Time
> Continuously
> Every 2 hours
> Every 4 hours
> Every 8 hours
> Every 12 hours
> Every 24 hours
> Every 48 hours
> Every 72 hours

When

Use this section of the Network Scheduler display to specify days the Diskeeper job will (or will not) be allowed to run on the selected computers.   You can specify any of these time periods to control when Diskeeper is allowed to run:

Everyday	Except Everyday
Weekends	Except Weekends
Weekdays	Except Weekdays
Mondays	Except Mondays
Tuesdays	Except Tuesdays
Wednesdays	Except Wednesdays
Thursdays	Except Thursdays
Fridays	Except Fridays
Saturdays	Except Saturdays
Sundays	Except Sundays

Between

Use this section of the Network Scheduler display to specify the beginning of a time period the Diskeeper job will (or will not) be allowed to run on the selected computers.   You can specify any of these time periods to specify the beginning of a Diskeeper schedule period:

All Day

12:00 midnight through 11:00 P.M. in one hour increments

And

Use this section of the Set It and Forget It display to specify the end of a time period the Diskeeper job will or will not be allowed to run on the selected volume.   You can specify any of these time periods to specify the end of a time period Diskeeper will (or will not) be allowed to run:

12:00 midnight through 11:00 P.M. in one hour increments

Set Remote Schedule

Use this option to set the specified schedule on the selected computer(s).   When you click **Set Remote Computer**, the scheduling information is written to the local computer in the \NetScheduler folder under the folder where you installed Diskeeper.   Individual files are written to this folder for each computer on which you schedule Diskeeper to run.

After clicking this option, you must click OK or Send Schedules to start the Diskeeper Network Scheduling Engine, and to begin sending the schedule information to the remote computers.   OK starts the engine and closes the dialog box − Send Schedules does the same, but does not close the dialog box.   Once the engine starts, it checks the individual scheduling information files on the local computer, determines which ones are new or have changed, then sequentially connects to each respective computer and updates the Diskeeper control file on each computer.

As the Network Scheduling Engine runs, a status window is displayed, showing computer currently being scheduled and the progress of the connection.   You can click **Cancel** in the status window at any time to stop the Scheduling Engine, but keep in mind that the schedules on any computers that were "Ready" when the Network Scheduling Engine was started will not be updated until the next time the engine is started.

Clear Remote Schedule

Use this option to clear a schedule you have previously set on the selected domains, workgroups, or computers, after you have clicked either OK or Send Schedules.

Much like setting a schedule, clearing a schedule   also involves writing scheduling information to disk on your local computer.   This information is essentially a schedule set to <u>not</u> run.   Once this information has been stored on the local computer (as indicated by the "Ready" status), send it to the remote computers by clicking either **OK** or **Send Schedules**.

OK

Click **OK** after clicking <u>Set Remote Schedule</u> to start the Diskeeper Network Scheduling Engine, and to begin sending the schedule information to the remote computers.   This option starts the Network Scheduling Engine and closes the Network Scheduling dialog box.

Cancel

Click **Cancel** to close the Network Scheduling dialog box without making any changes to the schedules on your remote computers.

Send Schedules

Click **Send Schedules** after clicking [Set Remote Schedule](#) to start the Diskeeper Network Scheduling Engine, and to begin sending the schedule information to the remote computers.   This option starts the Network Scheduling Engine, but does not close the Network Scheduling dialog box.

Any defragmentation job previously started on any partition of any selected computers will complete the current run through the partition before the new run schedule takes effect.

Clear Selection

Use this option to clear a schedule on the selected domains, workgroups, or computers, <u>before</u> you have clicked either <u>OK</u> or <u>Send Schedules</u>.

Refresh Status

Use this option to display the latest status of the network schedules and connections on your network.

If you use Send Schedules to start the Network Scheduling Engine, click **Refresh Status** after the Diskeeper Scheduling Engine stops, to update the status information in the Machine List box.

Help

Click **Help** to view context-sensitive help information about using the Diskeeper Network Scheduler.

Disk Drive Icon

Double click any of the disk drive icons to alternately hide and display the <u>Analyze</u> and <u>Defragment</u> icons.

Analyze Icon

Click an Analyze icon to highlight it, then click Go to start a fragmentation analysis of the selected partition.

Alternately, you can simply double click the Analyze icon to start the fragmentation analysis without needing to click **Go**.

Defragment Icon

Click a Defragment icon to highlight it, then click Go to start the "Manual Defragmentation" of the selected partition. Alternately, you can simply double click the Defragment icon to start defragmenting the partition without needing to click **Go**.

Workgroup Icon

Please Note: This icon only appears with the Windows NT Server version of Diskeeper.

Double click a Workgroup Icon to expand and display a list of all the computers in the Workgroup or Domain.

Rest of Workgroup Icon

Please Note: This icon only appears with the Windows NT Server version of Diskeeper.

Double click a Rest of Workgroup Icon to expand and display a list of all the other computers in the workgroup containing the local computer.

Text Display Button

Click **Text Display** to switch from a graphic display of your partition to a text report showing the fragmentation analysis or defragmentation information.

Click here to see an example of the Diskeeper text display.

Text Display

Much useful information is displayed in the Diskeeper text display.   Click any of the areas of the Diskeeper text display shown here for a description about that part of the display.
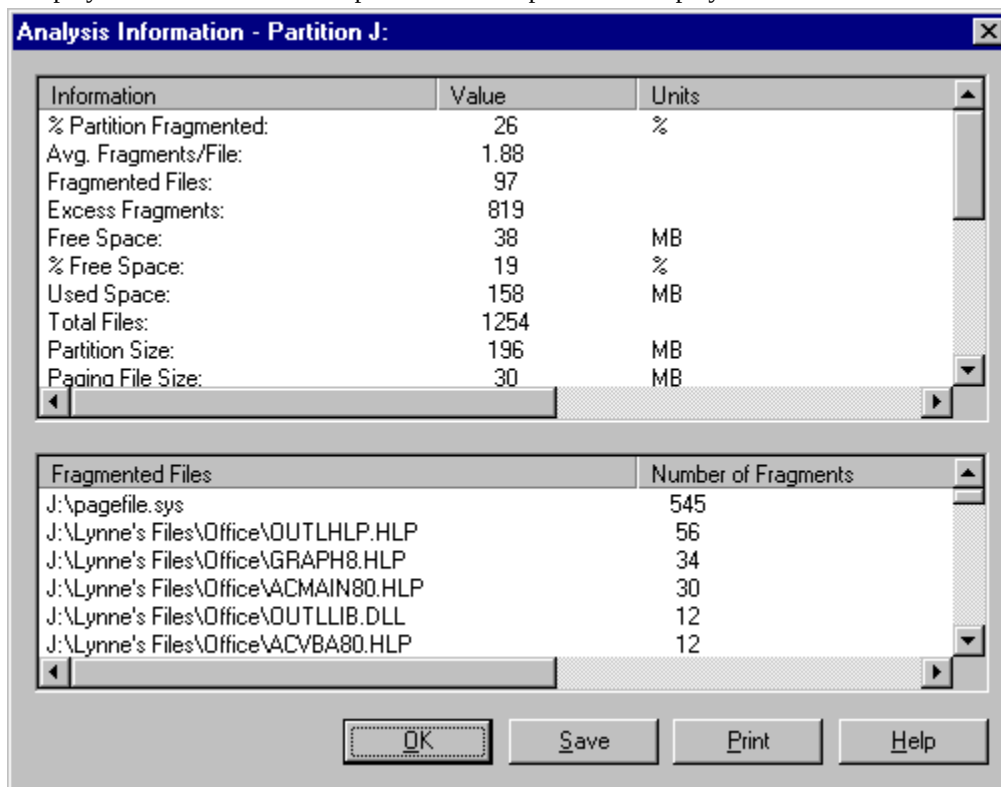
Note that most of the information shown in the Diskeeper text display can also be recorded in the Windows NT Event Log.   Click here for more information about logging Diskeeper information to the Windows NT Event Log.

Text Display Information

This section of the Analysis Information display lists much useful information about the files, directories, and free space on your partition.

The following information is shown:

% Partition Fragmented

Average Fragments/File

Fragmented Files

Excess Fragments

Free Space

% Free Space

Used Space

Total Files

Partition Size

Paging File Size

Use the scroll bar in this display to view this additional information:

Paging File Fragments

Average File Size

Total Directories

Fragmented Directories

Excess Directory Fragments

Cluster Size

MFT Size

Number of MFT Records

% MFT in Use

MFT Fragments

OK

Click **OK** to close the Text Display window and return to the main Diskeeper display.

Save

Click **Save** to save the text results of a fragmentation analysis.   Use this option after running the fragmentation analysis.

By default, the analysis file is saved as a file named **DriveX.any** (where *X* represents the drive letter) in the directory where Diskeeper is installed.   When you click **Save**, you are given the opportunity to change the file name and directory location.

This option is useful for comparing the condition of a partition before and after defragmenting the partition with Diskeeper.   Be sure to save the analysis before running Diskeeper, so you can see the benefits of running Diskeeper.   See the Open Analysis help topic for more information about opening a previously saved fragmentation analysis data file.

Note that if you are saving "before and after defragmentation" analysis files, you should use unique names for the files.   This prevents the "before" analysis file from being overwritten by the "after" analysis file.

Print

Click **Print** to print the text fragmentation analysis information.   This option sends the fragmentation analysis information to whatever printer is designated as your default printer.

This option is useful for comparing the condition of a partition before and after defragmenting the partition with Diskeeper.   See the Save help topic for information about saving the fragmentation analysis results.

Help

Click **Help** to view context-sensitive help about the Diskeeper text display.

Graphic Fragmentation Display

This section of the Diskeeper display shows a graphic representation of the fragmentation of your partition.   The colors of the display indicate the type and condition of the data on your partition.

- Green areas show system files, particularly the Master File Table (MFT) but also several other file system files. System files like these cannot be safely moved by Diskeeper (or any other defragmenter).   Keep in mind, however, these are not the files that make up the Windows NT operating system (which Diskeeper can successfully defragment) − they make up the NTFS file system.   The green areas of the display appear only on NTFS partitions.
- Green-striped areas show space on the partition reserved for expansion of the MFT.   This space is reserved when a partition is formatted, and cannot be used by applications, including Diskeeper.   Windows NT will, however, write files to this area when the partition becomes extremely full and no other free space is available.   Windows NT provides the capability for Diskeeper to move files out of this reserved area, but does not allow Diskeeper to move files into it.   These areas appear only on NTFS partitions.
- Yellow areas show the paging file (if it exists on the partition).
- Light blue areas show the directories on the partition.
- Red areas show fragmented files.
- Dark blue areas show contiguous (non-fragmented) files.
- Gray areas show free space on the partition.

Status Bar

The status bar indicates the percentage done of either the fragmentation analysis or various stages of defragmentation.

File Menu

The File Menu contains these options:

 Open Analysis

 Exclusion List

 Exit

Open Analysis

Use the Open Analysis option in the File menu to open and view a previously saved text-format fragmentation analysis data file.   When this option is chosen, you are given the opportunity to select the partition, directory, and filename of the fragmentation analysis file.

This option is useful for comparing the condition of a partition before and after defragmenting the partition with Diskeeper.   See the Save Analysis help topic for information about saving the fragmentation analysis results.

Save Analysis

To save the text results of a fragmentation analysis, first click **View Text** and then click **Save** in the text view display.

By default, the analysis file is saved as a file named DriveX.any (where *X* represents the drive letter) in the directory where Diskeeper is installed.   When this option is chosen, you are given the opportunity to change the file name and directory location.

This option is useful for comparing the condition of a partition before and after defragmenting the partition with Diskeeper.   Be sure to save the analysis before running Diskeeper, so you can see the benefits of running Diskeeper.   See the Open Analysis help topic for more information about opening a previously saved fragmentation analysis data file.

Note that if you are saving "before and after defragmentation" analysis files, you should use unique names for the files.   This prevents the "before" analysis file from being overwritten by the "after" file.

Print Analysis

Use the Print Analysis option in the File menu to print the text portion of a previously saved fragmentation analysis data file.   This option sends the fragmentation analysis information to whatever printer is designated as your default printer.

This option is useful for comparing the condition of a partition before and after defragmenting the partition with Diskeeper.   See the Save Analysis help topic for information about saving the fragmentation analysis results.

Exclusion List

Use the Exclusion List option in the File menu to create a list of files or directories you want to be excluded from being defragmented.

Exit

Use the Exit option in the File menu to completely exit from Diskeeper.   This option does not stop any defragmentation jobs that are running. This applies to both "Set It and Forget It" and "Manual Defragmentation" jobs.   If you exit while defragmentation jobs are running, the defragmentation run will continue until it is complete (in the case of "Manual Defragmentation" jobs) or until its scheduled completion time (in the case of "Set It and Forget It" jobs).

Analyze Menu

Use the options on the Analyze menu to control the analysis of fragmentation on your partitions.

The Analyze menu contains these options:

Select Partition

Continue

Pause

Stop

Select Partition

Use the Select Partition option in the Analyze menu to select a partition to be analyzed.

When you choose the Select Partition option, a list is displayed of the disk partitions detected on your computer. To select a partition, either click a listed partition and click **OK**, or simply double click the listed partition.   This starts the analysis immediately.

Continue

Use the Continue option in the Analyze menu to continue a previously paused fragmentation analysis of the selected partition.

Pause

Use the Pause option in the Analyze menu to temporarily pause the fragmentation analysis of the selected partition.

Stop

Use the Stop option in the Analyze menu to stop the fragmentation analysis of the selected partition.

Defragment Menu

Use the options on the Defragment menu to control the "Manual Defragmentation" of your partitions.

The Defragment menu contains these options:

Select Partition

Continue

Pause

Stop

Select Partition

Use the Select Partition option in the Defragment menu to select a partition to be defragmented.

When you choose the Select Partition option, a list is displayed of the disk partitions detected on your computer. To select a partition, either click a listed partition and click **OK**, or simply double click the listed partition.   This starts the defragmentation of the partition immediately, unless a previously scheduled defragmentation run is actively defragmenting the partition.

Continue

Use the Continue option in the Defragment menu to continue the previously paused defragmentation of a selected partition.

Pause

Use the Pause option in the Defragment menu to temporarily pause the defragmentation of the selected partition.

Stop

Use the Stop option in the Defragment menu to stop the defragmentation of the selected partition.

View Menu

Use the options on the View menu to display a text description of the fragmentation on the current partition, or to update the network tree display.

The View menu contains these options:

Text

Refresh (Diskeeper Server version only)

Text

Use the Text option in the View menu to display a text view of either a fragmentation analysis or the defragmentation of a partition.

[Click here](#) to see an example of the fragmentation analysis text display.

Refresh

Please note: This option is only available in the Windows NT Server version of Diskeeper.

Use the Refresh option to update the Diskeeper network tree display.   This is useful for times when computers join or exit from the network after you have started Diskeeper.

Options Menu

The Options menu contains these selections:

- ■ Priority

- ■ Event Logging

- ■ Show Summary After Analysis

- ■ Show Summary After Defragmentation

- ■ Show Orientation on Launch

Priority

Use the Priority option in the Options menu to select the priority at which Diskeeper defragmentation jobs run. You can set the priority independently for both "Set It and Forget It" and "Manual Defragmentation" jobs.

The default priority for scheduled "Set It and Forget It" defragmentation jobs is "Lowest", while Manual Defragmentation jobs run at "Normal" priority. The priority for either type of defragmentation job can be changed with the Priority option.

Running at Lowest priority minimizes the system performance impact when Diskeeper is defragmenting a partition.   However, defragmentation jobs running at Lowest priority can take substantially longer to complete than those running at higher priorities, since Diskeeper "backs off" for any process running at a higher priority (even screen savers).

For this reason, you may have occasions where you want to run Diskeeper to complete a defragmentation job more quickly.   In these instances, use the higher priority options.   Keep in mind, though, that the performance of other applications running on your computer will probably be impacted when Diskeeper is run at higher priorities.

Event Logging

A log of Diskeeper activity is stored in the Windows NT Application Event Log file.

Use the Event Logging option in the Options menu to alternately enable and disable the logging of various Diskeeper events to the Windows NT Application Event Log.

When Diskeeper logs an event, the event and its message are appended to the Windows NT Application Event Log file, along with the date, time, user, and other identifying information.   These events can then be viewed with the Event Viewer by choosing the Application option in the Event Viewer Log menu.   This can be done on either local computers or remote computers on your network.

The Event Viewer is found in the Windows NT Administrative Tools group.

The Diskeeper Event Logging option displays this dialog box listing events for which logging can be enabled or disabled.   Click on the options shown below for descriptions of the information that is logged.
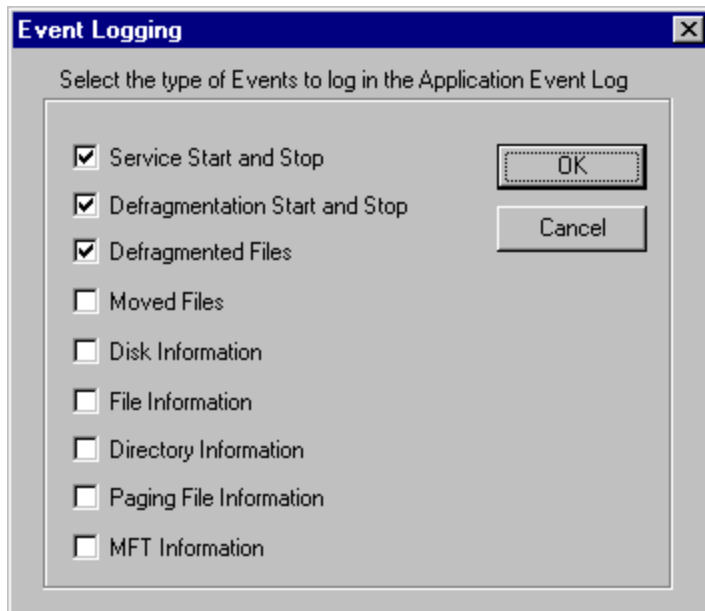
Click here for information on how to set up the Application Log.

Setting Up the Application Log

Diskeeper messages are placed in the Windows NT Application Event Log.   By default, this log is 512 kilobytes in size, and is set to overwrite events older than 7 days old.   Diskeeper may quickly fill the log file if these default settings are used.   To prevent this, perform these steps to change the size and overwriting characteristics of the Application Event Log:

1   From the Windows NT Start button, choose Programs, then the Administrative Tools Program Group.

2   In the Administrative Tools Program Group, choose the Event Viewer.

3   In the Event Viewer, open the Log menu and choose the Log Settings option.

4   In the Event Log Settings dialog box, perform these steps:

   n   Set the Change Setting to Application Log.

   n   Set the Maximum Log Size to 2048 kilobytes.

   n   Enable the Overwrite Events as Needed option.

   n   Choose OK to return to the Event Viewer Log.

Setting Up the Application Event Log

Diskeeper messages are placed in the Windows NT Application Event Log.   By default, this log is 512 kilobytes in size, and is set to overwrite events older than 7 days old.   Diskeeper may quickly fill the log file if these default settings are used.   To prevent this, perform these steps to change the size and overwriting characteristics of the Application Event Log:

1   From the Windows NT Start button, choose Programs, then the Administrative Tools Program Group.

2   In the Administrative Tools Program Group, choose the Event Viewer.

3   In the Event Viewer, open the Log menu and choose the Log Settings option.

4   In the Event Log Settings dialog box, perform these steps:

- Set the Change Setting to Application Log.
- Set the Maximum Log Size to 2048 kilobytes.
- Enable the Overwrite Events as Needed option.
- Choose OK to return to the Event Viewer Log.

Service Start and Stop

When this option is enabled, an entry is made to the Event Log each time the Diskeeper service starts or stops. This option is enabled by default.

Defragmentation Start and Stop

When this option is enabled, an entry is made to the Event Log whenever a defragmentation run starts or stops. This option is enabled by default.

Defragmented Files

When this option is enabled, an entry is made to the Event Log listing each file that is defragmented by Diskeeper.   Note that enabling this option can cause the Event Log to fill rather quickly, especially if Diskeeper defragments a high number of fragmented files.   (This will be particularly likely when Diskeeper is first run on a partition.)   This option is enabled by default.

Moved Files

When this option is enabled, an entry is made to the Event Log each time a file is moved for reasons other than to defragment the file.   This would include cases where files are moved in order to create more contiguous free space.   Here again, enabling this option can cause the Event Log to fill quickly. This option is not enabled by default.

Disk Information

When this option is enabled, an entry is made to the Event Log at the end of each defragmentation run showing general information about the disk partion that was defragmented.   This appears in the Windows NT Event Viewer as Diskeeper Event 15.   When you double click Diskeeper Event 15 in the Event Viewer, information similar to this example is displayed.   Click on any of the descriptions shown in the example below for more information about that description.   This option is not enabled by default.

File Information

When this option is enabled, an entry is made to the Event Log at the end of each defragmentation run showing information about the files on the disk partition that was defragmented.   This appears in the Windows NT Event Viewer as Diskeeper Event 16.   When you double click Diskeeper Event 16 in the Event Viewer, information similar to this example is displayed.   Click on any of the descriptions shown in the example below for more information about that description.   This option is not enabled by default.

Event Detail

Date:	4/28/98	Event ID:	16
Time:	2:50:54 PM	Source:	Diskeeper
User:	N/A	Type:	Information
Computer:	LANDO	Category:	None

Description:

```
Diskeeper Message
File Information for Drive J:
Total Files: 1254
Fragmented Files: 97
Excess Fragments:    819
Avg. Fragments/File: 1.88
Avg. File Size: 193. 3 KB
Number of Files Defragmented:  255
Number of Fragments Eliminated:  525
```

Data: ○ Bytes   ○ Words
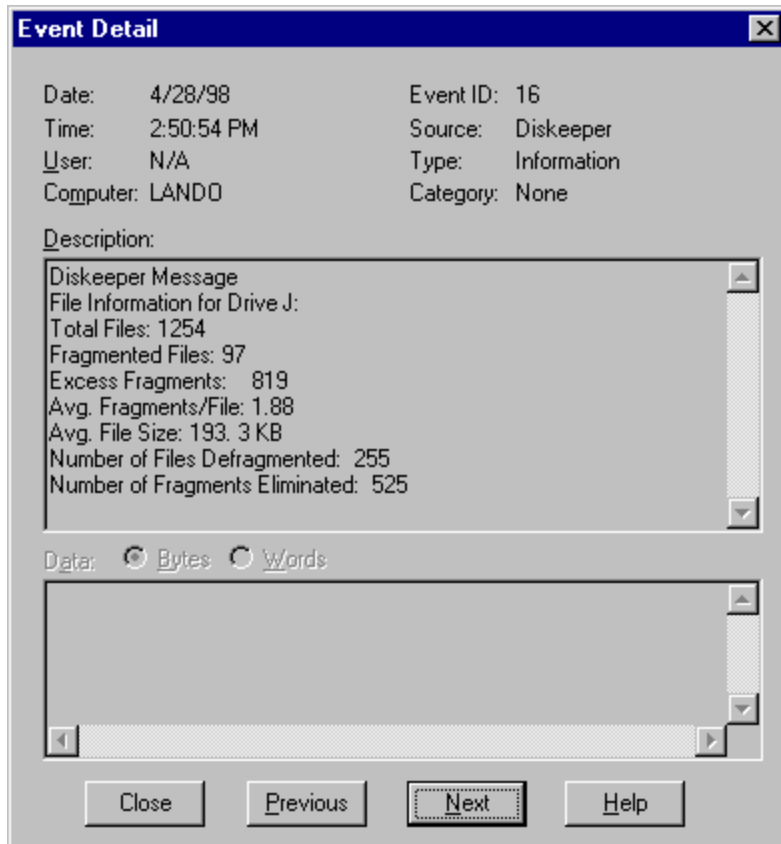
[Close]   [Previous]   [Next]   [Help]

Directory Information

When this option is enabled, an entry is made to the Event Log at the end of each defragmentation run showing information about the directories on the partition that was defragmented.   This appears in the Windows NT Event Viewer as Diskeeper Event 18.   When you double click Diskeeper Event 18 in the Event Viewer, information similar to this example is displayed.   Click on any of the descriptions shown in the example below for more information about that description.   This option is not enabled by default.

```
Event Detail                                              [X]

  Date:      4/28/98           Event ID:  18
  Time:      2:50:54 PM        Source:    Diskeeper
  User:      N/A               Type:      Information
  Computer: LANDO              Category:  None

  Description:
  ┌─────────────────────────────────────────────────┐▲
  │Diskeeper Message                                  │
  │Directory Information for Drive J:                 │
  │Total Directories: 199                             │
  │Fragmented Dirs:   10                              │
  │Excess Dir Frags:  21                              │
  │                                                   │
  │                                                   │
  │                                                   │▼
  └─────────────────────────────────────────────────┘

  Data:    ⊙ Bytes  ○ Words
  ┌─────────────────────────────────────────────────┐▲
  │                                                   │
  │                                                   │
  │                                                   │▼
  │◄                                                ►│
  └─────────────────────────────────────────────────┘

     Close        Previous       Next         Help
```

Paging File Information

When this option is enabled, an entry is made to the Event Log at the end of each defragmentation run showing information about the paging file on the partition that was defragmented (if it exists on the partition).   This appears in the Windows NT Event Viewer as Diskeeper Event 17.   When you double click Diskeeper Event 17 in the Event Viewer, information similar to this example is displayed.   Click on any of the descriptions shown in the example below for more information about that description.   This option is not enabled by default.

MFT Information

When this option is enabled, an entry is made to the Event Log at the end of each defragmentation run showing information about the Master File Table (MFT) on the partition that was defragmented.   (Keep in mind, since only NTFS partitions have an MFT, this information will only apply to NTFS partitions.)   The entry appears in the Windows NT Event Viewer as Diskeeper Event 19.   When you double click Diskeeper Event 19 in the Event Viewer, information similar to this example is displayed.   Click on any of the descriptions shown in the example below for more information about that description.   This option is not enabled by default.

Event Detail

Date: 4/28/98   Event ID: 19
Time: 3:14:08 PM   Source: Diskeeper
User: N/A   Type: Information
Computer: LANDO   Category: None

Description:

```
Diskeeper Message
MFT Information for Drive J:
MFT Size:    1505 KB
# MFT Records: 1505
% MFT In Use:  1%
MFT Fragments: 2
```

Data: ○ Bytes   ○ Words

Close   Previous   Next   Help

Show Summary After Analysis

Use the Show Summary After Analysis option in the Options menu to alternately enable and disable a summary screen displayed after a fragmentation analysis.

This summary screen explains the condition of the analyzed partition, and makes recommendations based on the condition found.

Note that the summary screen includes information about the amount of free space available on the partition for defragmentation.   This figure is based on the space available to Diskeeper, but on NTFS partitions this is not necessarily the total free space on the partition.   A certain percentage of the total partition is reserved for the Master File Table (MFT) on NTFS partitions, and this space cannot be used by Diskeeper for defragmenting files. Because of this, the figure shown in the Diskeeper post-analysis summary on NTFS partitions will not match the total free space figure displayed in the Diskeeper text display (or other utilities like Disk Properties in Windows NT Explorer).

Show Summary After Defragmentation

Use the Show Summary After Defragmentation option in the Options menu to alternately enable and disable a summary screen displayed after a partition is defragmented.

This summary screen explains the condition of the partition after defragmentation, and describes any situations found which might prevent Diskeeper from completely defragmenting the partition.

The information presented in the summary is based on an analysis made before and after the defragmentation run.

Note that the summary screen includes information about the amount of free space available on the partition for defragmentation.   This figure is based on the space available to Diskeeper, but on NTFS partitions this is not necessarily the <u>total</u> free space on the partition.   A certain percentage of the total partition is reserved for the Master File Table (MFT) on NTFS partitions, and this space cannot be used by Diskeeper for defragmenting files. Because of this, the figure shown in the Diskeeper post-defragmentation summary on NTFS partitions will not match the total free space figure displayed in the Diskeeper text display (or other utilities like Disk Properties in Windows NT Explorer).

Show Orientation on Launch

Use the Show Orientation on Launch option in the Options menu to alternately enable and disable the Diskeeper orientation screen each time Diskeeper is started.

The Diskeeper orientation screen presents a "quick start" explanation of Diskeeper operation.

Set It and Forget It Menu

The Set It and Forget It menu contains these options:

 Partition Scheduler

 Network Scheduler (Diskeeper Server version only)

Partition Scheduler Option

Use the Partition Scheduler option in the Set It and Forget It menu to create a defragmentation schedule for one or more specific partitions.

Click here to see an example of the Set It and Forget It Partition Scheduling dialog box.

Use a defragmentation schedule to specify times when "Set It and Forget It" defragmentation jobs will be forced to run, or times they will not be allowed to run.

Schedules only affect "Set It and Forget It" defragmentation jobs.   Any defragmentation job previously started on a partition will be safely stopped when a new run schedule is specified.

When you choose the Partition Scheduler option, always select the partition in the Partition List box *before* clicking on any of the other Partition scheduler controls.

If you are using Diskeeper for Windows NT Server, note that to set or alter a run schedule on remote computers on your network, you must have sufficient permissions to edit a file in the Diskeeper directory on the remote computer.   See Troubleshooting Network Connections for more information.

Network Scheduler Option

Please note: This option is only available in the Windows NT Server version of Diskeeper.

Use the Network Scheduler option in the Set It and Forget It menu to create a defragmentation schedule for all the disk partitions on one or more specific computers, workgroups, or domains on your network.

Click here to see an example of the Set It and Forget It Network Scheduling dialog box.

Use a defragmentation schedule to specify times when "Set It and Forget It" defragmentation jobs will be forced to run, or times they will not be allowed to run.

Schedules only affect "Set It and Forget It" defragmentation jobs.   Any active defragmentation job previously started on a partition will complete.   After any previously started jobs complete, the new schedule takes effect.

When you use   the Network Scheduler, always select one or more computers, workgroups, or domains in the Machine List box *before* clicking any of the other Network Scheduling controls.   To select more than one item to schedule, hold the <Ctrl> key while clicking on the computers, workgroups, or domains listed in the Machine List box that you want to schedule.   Or, you can hold the <Shift> key to select a continuous list of items in the Machine List box.

Note that to set or alter a run schedule on remote computers on your network (with Diskeeper for Windows NT Server), you must have sufficient permissions to edit a file in the Diskeeper directory on the remote computer. See Troubleshooting Network Connections for more information.

Connect Menu

The Connect menu contains this option:

 Select Computer

Please note: This option is only available in the Windows NT Server version of Diskeeper.

Select Computer Option

**Please note:** This option is only available in the Windows NT Server version of Diskeeper.

Diskeeper for Windows NT Server can analyze fragmentation and control the defragmentation of partitions on computers connected to your network or partitions on your local computer.   You must specifically connect to a computer before using Diskeeper.

By default, the Network Connections dialog box is displayed each time Diskeeper is started.   Click **OK** to connect to the local computer or select a computer in the Connect To box to connect to another computer on your network.

After starting Diskeeper, you can change which computer you are connected to by clicking the **Connect** button on the toolbar or by choosing the Select Computer option on the Connect menu to control Diskeeper on other computers connected to your network.

Diskeeper for Windows NT Workstation or Diskeeper for Windows NT Server must also be installed on the remote computer.

When the **Connect** button is clicked or Select Computer option is invoked, the Network Connections dialog box is displayed. Click on the different areas of the dialog box sample shown below for information about that section of the Network Connections dialog box.
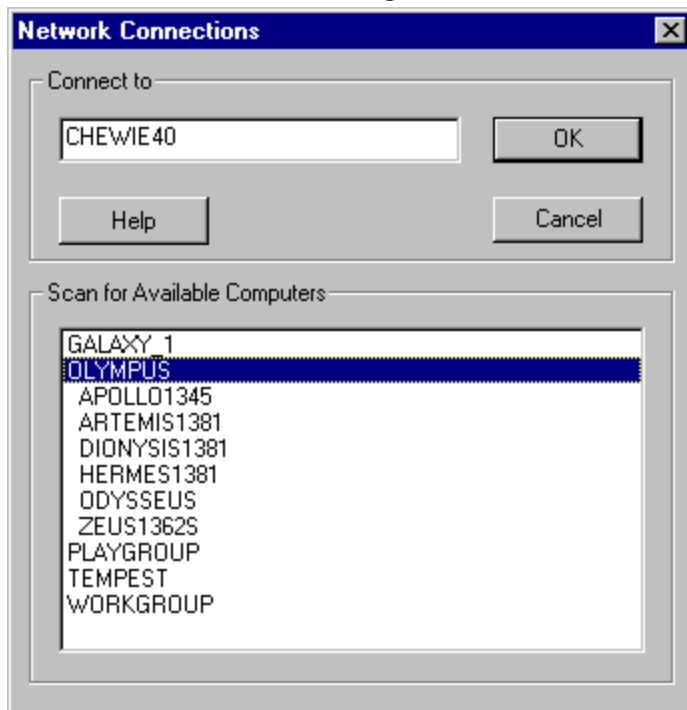
Choose the computer upon which you want to run Diskeeper, then click **OK**.   After the computer is connected, the name of the computer being controlled is displayed at the top of the main Diskeeper window.

After selecting the computer upon which to run Diskeeper, start analyzing or defragmenting any of the partitions on that computer in the same manner as running Diskeeper on a local computer.   All of the options available when running Diskeeper on a local computer are also available across a network.

Note that after rebooting your Windows NT system, you may need to wait several minutes for the Windows NT Browser to detect the available network computers before the listing of available computers on your network appears in the tree view section of the Diskeeper display.

Error messages are displayed if Diskeeper fails to connect to a network computer.

Connect To

This section of the Network Connections dialog box displays the name of the computer you are connecting to.

To connect to remote computers, double click on the computer name shown in the <u>Scan for Available Computers</u> section of the Network Connections dialog box.   Or, if you know the name of the remote computer you want to connect to, simply type the name of the remote computer in the Connect To edit box.

Help Button

Click **Help** for context-sensitive help about the Diskeeper network connection option.

OK Button

Click **OK** after selecting the computer to which you want to connect.

Cancel Button

Click **Cancel** to cancel any changes you have made to the Diskeeper network connection and return to the opening Diskeeper screen.   If no computer has been specified previously, Diskeeper will connect to the local computer.

Scan for Available Computers

When the Network Connections dialog box is first opened, this section displays the domains and workgroups detected on your network.

Double click on any of the domain or workgroup names listed to expand the display and show the individual computers within the domain or workgroup.

Double click an individual computer name to connect to that computer.   Alternatively, click on the individual computer name and click **OK**.

Troubleshooting Network Connections

Please note: This information only applies to the Windows NT Server version of Diskeeper.

[Network Error Messages](#)

[Editing Exclusion Lists](#)

[Creating or Altering Defragmentation Schedules Across a Network](#)

Network Error Messages

If Diskeeper encounters any error while searching the network for computers, a pop-up error message is displayed.   After choosing the OK button in this message box, a list of the computers it did find is displayed. This list will minimally be the local computer.

The following circumstances can prevent Diskeeper from connecting to a network computer, thus causing the error message to be displayed:

- Diskeeper is not installed on the remote computer.
- The Diskeeper service has not been started on the remote computer.
- The Diskeeper main menu is open on the remote computer.
- There is a problem within the Windows NT network.
- You are not logged onto an account with Administrator privileges on the remote computer.

Also, if your computer does not have a network card installed or the network is not started, a message box is displayed stating that the network is not present or not started.

Editing Exclusion Lists

To edit exclusion lists on remote computers on your network, you must have sufficient permissions to edit a file in the Diskeeper directory on the remote computer.   If you do not have sufficient permissions, an error message is displayed stating that access is denied to the exclusion list.   If you cannot edit an exclusion list that you think you have permission to use, there are two likely possibilities:

- You logged on with a username that the target computer recognizes and a password that it does not recognize.   A common example is to log on to your computer as Administrator and then try to edit an exclusion list on a computer that has its own Administrator account established with a different password.
- Your computer and the remote computer do no share the same network protocol that is running on the target computer.

Creating or Altering Defragmentation Schedules Across a Network

To create or alter run schedules on remote computers on your network, you must have sufficient permissions to edit a file in the Diskeeper directory on the remote computer.   If you do not have sufficient permissions, an error message is displayed stating that access is denied to the run schedule.   If you cannot create or alter a run schedule that you think you have permission to use, there are two likely possibilities:

- You logged on with a username that the target computer recognizes and a password that it does not recognize.   A common example is to log on to your computer as Administrator and then try to edit an exclusion list on a computer that has its own Administrator account established with a different password.
- Your computer is not running a protocol that is running on the target computer.

Empty List of Available Computers

In some instances, when you choose the Connect option in the Network menu, the list of available computers in the Network Connections dialog box may be blank.   This can occur shortly after rebooting your Windows NT computer.

Note that after rebooting your Windows NT computer, you may need to wait several minutes for the Windows NT Browser to detect the available network computers before the tree view of available computers on your network appears, then use the Refresh option in the View menu to update the tree view display.   If the list of computers still does not contain computers you expect to see, there are several possible causes:

n   One or more of the remote computers is not running.

n   One or more of the remote computers is configured to be hidden from computer browsers.

n   Your Browser service may not be started.

n   One or more of the remote computers is in a domain that is not in the list of domains to be browsed.   Use the Network applet in the Windows NT Control Panel to reconfigure the Browser service.

Advanced Tools Menu

The Advanced Tools menu contains this option:

 Boot-Time Defragmentation

Boot-Time Defragmentation

Use the Boot-Time Defragmentation option in the Advanced Tools menu to:

§   Defragment the directories on a partition and consolidate them into a single location

§   Defragment the paging file (if one exists on the partition)

Boot-time defragmentation opens up larger areas of contiguous partition space for new file creation and modification.
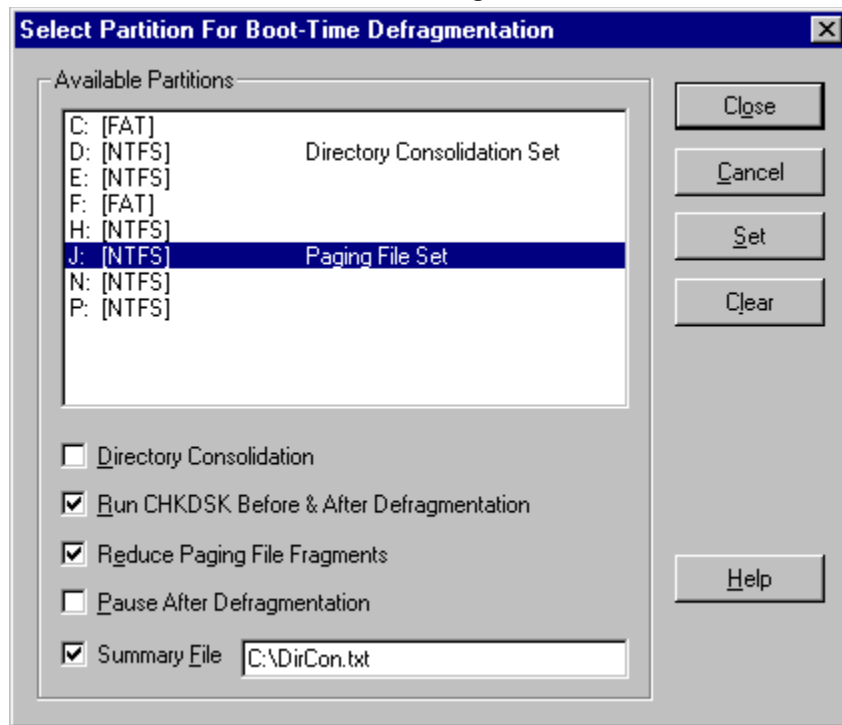
Click here to see an example of the Boot-Time Defragmentation dialog box.

Several points about Boot-Time Defragmentation:

1   The Boot-Time Defragmentation feature relies on having a contiguous free space in which to move the directories and/or paging file on your partition.   Therefore, it is important to run Diskeeper in either the Set It and Forget It or Manual Defragmentation mode before running the Boot-Time Defragmentation.

2   Boot-Time Defragmentation moves the directories and/or paging file to the first available free space into which they will fit.   This can be any location on the partition.

3   Boot-Time Defragmentation is a one-time operation.   After it runs on a partition, it is not automatically reset to run again.   You must set it each time you want it to run on a partition.

4   It is safe to re-start your computer midway through the Boot-Time Defragmentation operation.   However, if you do so, you should use the Error Checking option in Drive Properties/Tools on the partition that was being processed when you restarted your computer, and enable both the fix and the scan options, or (if you are running from the Windows NT Command Prompt) run CHKDSK, using the /F and /R qualifiers.   This ensures the files and free space on the partition are correctly allocated.

Boot-Time Defragmentation Dialog Box

Click on the different controls in the dialog box shown below for information about that control.

Select Partition For Boot-Time Defragmentation

Available Partitions

```
C: [FAT]
D: [NTFS]          Directory Consolidation Set
E: [NTFS]
F: [FAT]
H: [NTFS]
J: [NTFS]          Paging File Set
N: [NTFS]
P: [NTFS]
```

- [ ] Directory Consolidation
- [x] Run CHKDSK Before & After Defragmentation
- [x] Reduce Paging File Fragments
- [ ] Pause After Defragmentation
- [x] Summary File   `C:\DirCon.txt`

Close
Cancel
Set
Clear

Help

Available Partitions

Use this section of the dialog box to specify the partition(s) upon which you want to consolidate the directories and/or the paging file.   You can select more than one partition at a time, but be aware that the partitions will be processed one at a time, and your computer   will be re-booted automatically after each partition is processed. This will substantially increase the time needed to complete the operation.

Always select at least one partition *before* choosing any of the other options in the Defragmentation dialog box.

Directory Consolidation

Check this box to defragment and consolidate the directories on the selected partitions the next time you re-boot your computer.

Note that the selected partitions must have enough contiguous free space to accommodate the directories. If that condition is not met when you check this box,   a warning message is displayed and the option is disabled. For this reason, it is recommended that you first run Diskeeper in the Manual Defragmentation mode on the selected partitions before using the Directory Consolidation option.

Run CHKDSK Before & After Defragmentation

Use this control to specify whether Windows NT CHKDSK is run (using the /F and /R qualifiers) before and after the Boot-Time Defragmentation operation.   Running CHKDSK adds time to the operation, but it can correct disk errors that otherwise would hamper effective defragmentation.

Note that if you enable this option and select more than one partition at a time for defragmentation, CHKDSK will run on each partition separately and cumulatively.   This is due to the nature of the Windows NT boot sequence.   For example, if you select partitions C:, D: and E: for Boot-Time Defragmentation and have the "Run CHKDSK Before & After Defragmentation" option enabled, the following sequence occurs:

§   CHKDSK on C:
§   Defragmentation on C:
§   CHKDSK on C:
§   CHKDSK on D:
§   Defragmentation on D:
§   CHKDSK on C:
§   CHKDSK on D:
§   CHKDSK on E:
§   Defragmentation on E:
§   CHKDSK on C:
§   CHKDSK on D:
§   CHKDSK on E:

As you can see, if you select multiple partitions for Boot-Time Defragmentation, the cumulative CHKDSK operations will mount up, thus considerably increasing the time needed for the entire re-boot operation.

Note: Running CHKDSK can potentially take <u>many</u> hours, especially on large partitions. Therefore, we strongly recommend running no more than one partition at a time, since we <u>also</u> recommend CHKDSK be run before and after.

Reduce Paging File Fragments

Check this box to defragment the Windows NT paging file in the selected partition the next time you re-boot your computer.

Note that the selected partitions must have enough contiguous free space to accommodate the paging file. If that condition is not met when you check this box,   a warning message is displayed and the option is disabled. For this reason, it is recommended that you first run Diskeeper in the Manual Defragmentation mode on the selected partitions before using the Reduce Paging File Fragments option.

Pause After Defragmentation

When enabled, this option causes the Boot-Time Defragmentation operation to pause after completion.   It remains in this paused state until you manually re-start your computer (by either pressing the Reset button or turning off the power switch).   If this option is not enabled, the Boot-Time Defragmentation operation pauses 15 seconds (to allow you to read any messages on the monitor screen), then automatically re-boots your computer.

Summary File

Use the Summary File option to cause a text file to be written that summarizes the Boot-Time Defragmentation operation.

When this option is enabled, a default drive, directory, and file name are shown in the dialog box similar to this:
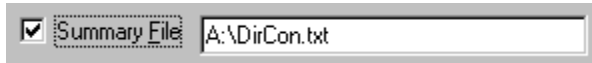
By default, the summary file is written to your floppy drive (A:).   This dialog box can be edited to specify another drive, directory path, and filename.   However, the summary file <u>cannot</u> be written to the partition upon which you are running the Boot-Time Defragmentation.

Close

Click **Close** after clicking Set to save any settings you have made and close the dialog box.

Cancel

Click **Cancel** to close the dialog box without making any changes.

Set

Click **Set** to enable the Boot-Time Defragmentation of one or more selected partitions.   When a partition has been set, it will be noted in the Available Partitions box.   Also use the Set button to change the characteristics of a previously set Boot-Time Defragmentation (such as enabling/disabling the Summary File option).

The next time the computer is re-booted, the Boot-Time Defragmentation operation will be run on any partitions that are set.

You must set a partition each time you want to run the Boot-Time Defragmentation − partitions do not remain set after the operation has been run.

Clear

Click **Clear** to "un-set" any partition(s) that have been previously set for Boot-Time Defragmentation.

Help

Click **Help** to view context-sensitive help about using the Boot-Time Defragmentation feature.

Help Menu

The Help menu contains these options:

 Orientation

 Contents

 About

Orientation

Use the Orientation option to display the Diskeeper orientation opening screen.   This display presents a brief "quick start" of Diskeeper operation.

Contents

Use the Contents option to view the Table of Contents for the Diskeeper help system.

About

Use the About option to view the version number and other really interesting information about Diskeeper.

Partition

This section of the fragmentation analysis display shows which disk partition is being analyzed.

Partition Size

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the total amount of space on the partition.   This includes files and free space, as well as disk space used by the operating system (such as directory files and the Master File Table) but not reported in "Used Space".

Cluster Size

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the cluster size for the partition.   A disk cluster represents a number of disk sectors treated as a single unit. The entire disk is divided into clusters, each one a minimum increment of storage.

Used Space

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the total amount of disk space (in kilobytes) currently occupied by files.   This does not include zero-length files, or certain files used by the operating system (such as directory files and the Master File Table).

Free Space

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the total amount of free space on the partition.

Percent Free Space

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the percentage of space on the partition that is free.   This includes the free space in the area reserved for the Master File Table (MFT) on NTFS partitions.

Paging File Size

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the size of the paging file on the partition.   This section will display zero when no paging file is present.

Paging File Fragments

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the number of fragments the paging file (if it exists on the partition) is broken into.

Total Directories

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the total number of directories present on the partition.

Fragmented Directories

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the number of fragmented directories on the partition.

Excess Directory Fragments

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the total number of directory fragments on the partition.   Contiguous directories are not counted in this total, but each additional piece of any fragmented directory is counted.

Total Files

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the total number of files on the partition.   This number does not include zero-length files or (in most cases) files less than one cluster in size on NTFS partitions.   Files less than one cluster in size *may* be included, depending on the file size and the cluster size.

Average File Size

This section of the fragmentation analysis or the Windows NT Event Log entry display shows the average size of all the files on the partition.   This number does not include any zero-length files or paging files.

Fragmented Files

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the total number of fragmented files on the partition.

Excess Fragments

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the total number of file fragments on the partition.   Contiguous files are not counted in this total, but each additional piece of any fragmented file is counted.

Percent of Partition Fragmented

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the percentage of the disk partition that contains fragmented data.   For example, a figure of 33% indicates one-third of the space on the partition contains fragmented files.   This figure is a good overall indication of the state of fragmentation on the partition.

Average Fragments per File

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the average number of fragments per file on the partition.   This is a good index of how fragmented the files on the partition are.

If the average fragments per file figure is 1.00, the files are contiguous.   If the figure is 1.10, then 10% of the files, on average, are in two pieces.   1.20 means 20%, 1.30 means 30%, etc.   A figure of 2.00 means the files average two fragments each.   1.00 is the best figure attainable, indicating that all files or nearly all files are contiguous.

MFT Size

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the size of the Master File Table (MFT).

Since the MFT is only used on NTFS partitions, this section is grayed out on FAT partitions in the text analysis display, and appears as zeros in the Windows NT Event Log entry.

Number of MFT Records

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the number of individual file records found in the Master File Table (MFT).   This figure will not necessarily correspond with the number of files presently on the partition, since the file records remain in the MFT, even after a file is deleted. Since the MFT is only used on NTFS partitions, this section is grayed out on FAT partitions.

Percent of MFT In Use

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the percentage of the Master File Table (MFT) in use.

The MFT grows as the number of files on the partition increases, but is not reduced in size when files are deleted from the partition.

Since the MFT is only used on NTFS partitions, this section is grayed out on FAT partitions.

MFT Fragments

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the number of fragments the Master File Table (MFT) is broken into.

Since the MFT is only used on NTFS partitions, this section is grayed out on FAT partitions.

Most Fragmented Files

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the directory path and filename of the 50 most fragmented files on the partition, and the number of fragments those files are in.   If these files are ones that users access frequently, the impact to your system performance may be greater than indicated by the Average Fragments per File figure.

Number of Fragments

This section of the fragmentation analysis display or the Windows NT Event Log entry shows the number of fragments associated with the most fragmented files on your partition.

Fragmentation Analysis Status Bar

When the fragmentation analysis is running, this section of the display shows the percentage of the analysis completed, and also displays a message indicating when the analysis is done.

Number of Defragmented Files

This section of the Windows NT Event Log shows the total number of files that were defragmented during a Diskeeper defragmentation run.

Number of Fragments Eliminated

This section of the Windows NT Event Log shows the total number of fragments that were eliminated during a Diskeeper defragmentation run.

What is Diskeeper?

Running under the Windows NT operating system, Diskeeper finds files that are not stored on the partition in a single location, but instead are scattered in pieces all over the partition.   Files in such a condition are referred to as *fragmented* files.   As Diskeeper finds such files, it safely moves the pieces of each file, so each file is in a single, contiguous space on the partition.

Diskeeper can do this automatically in the background, while users are actively accessing data on the same partition.   Or, for those times when you want to defragment a partition *now*, Diskeeper provides a manual, high-priority defragmentation option.

Using the Diskeeper Help Internet Access

The Diskeeper Help system gives you the ability to jump directly from the running Help system to the Internet. This assumes, of course, that you have Internet access and a default Web browser or navigator on your system. When you click a text hotspot or button that links to the Internet, your Web browser or navigator is automatically started.

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Frequently Asked Questions

The following topics list several questions often asked about Diskeeper.

[Why won't my disk partition defragment completely?](#)

[Why doesn't Diskeeper move directories while Windows NT is running?](#)

[Why doesn't Diskeeper defragment paging files while Windows NT is running?](#)

[Why doesn't Diskeeper defragment the Master File Table?](#)

[Why doesn't Diskeeper completely consolidate the free space on my partition?](#)

[Why don't my files get moved to the beginning of the partition?](#)

[Why don't some of my NTFS partitions appear in the Diskeeper Tree View?](#)

[What are the "Stages" Diskeeper goes through to defragment my partition?](#)

[How do I determine how often to run Diskeeper on my partition?](#)

[Why don't my defragmentation jobs all start at the same time?](#)

[Why doesn't the free space reported in the posts-analysis (or defragmentation) pop- up match what the Diskeeper text display shows?](#)

[Why didn't the Boot-Time Consolidation move my directories?](#)

[Should I use Diskeeper on RAID arrays?](#)

Click here to visit Executive Software's Web site for the latest Frequently Asked Questions:

{button Visit Executive Software,EF(`Connect.exe',"http://www.execsoft.com",1)}

Note: It is necessary for you to have the default Web browser or navigator defined on your computer before clicking on the button.

Why won't my partition defragment completely?

This can be the result of several situations:

n   If your partition is extremely full, there may not be sufficient free space to effectively defragment the files. In this case, we recommend temporarily moving some of the files off the partition, particularly large files. This temporary measure often allows Diskeeper the "working room" it needs to complete the defragmentation process.   Also, this allows Diskeeper to defragment the free space on the partition, increasing the possibility that the temporarily-moved files can be moved back to the partition in a contiguous (or at least less fragmented) condition.

n   Another cause of incomplete defragmentation is a fragmented paging file. Click here for more information on how to remedy this.

n   A partition that has (at one time or another) been filled to capacity may have a severely fragmented Master File Table (MFT).   There is a White Paper entitled *The Effects of Fragmentation on Windows NT File System Performance* available from the Executive Software Web site that describes the causes and effects of MFT fragmentation.   To view or download this White Paper, start your Web browser or navigator and click here.

n   Another situation that can prevent complete defragmentation of a partition is the existence of a large number of directories on the partition.   See Why doesn't Diskeeper move directories while Windows NT is running? for more information.

n   Yet another cause for incomplete defragmentation can be a security access situation. It is necessary for both SYSTEM and ADMINISTRATOR to have full control over a file (or the directory folder it is in) in order for Diskeeper to have access to move the file. This is because the Diskeeper service runs under the Administrator account, and System access is necessary to safely defragment files.   This is a security feature that is governed by the Windows NT C2 security requirements.

Why doesn't Diskeeper move directories while Windows NT is running?

By its very design, Windows NT does not allow directories on a partition to be moved online (when the computer is running and the operating system is fully started).   This is due to data integrity issues related to the way Windows NT maintains directory information while Windows NT is active.   In its online mode, Diskeeper runs while other processes are active on the system, and therefore does not attempt to move directories online. However, Diskeeper does provide a method by which you can defragment and consolidate the directories on your partition at boot-time.   See Boot-Time Defragmentation for more information.

Why doesn't Diskeeper defragment the Master File Table?

The Master File Table (MFT) is the area on an NTFS partition where Windows NT keeps all the information necessary for the operating system to retrieve files from the partition.   The MFT also contains information such as the file creation, modification, and backup dates and times.   In essence, the MFT contains everything Windows NT needs to know about the files on the partition.

Since the MFT is held open for exclusive use, Diskeeper is unable to move any pieces of this critical system file. Otherwise, data integrity would be jeopardized.

Why doesn't Diskeeper defragment paging files while Windows NT is running?

Diskeeper cannot defragment paging files while Windows NT is running, since paging files <u>must</u> be open for exclusive use by Windows NT at all times.   However, a paging file can be defragmented during boot-time, before Windows NT has started up.   See <u>Defragmenting Paging Files</u> for information about handling paging file fragmentation.

How can I handle paging file fragmentation?

The paging file is open for exclusive use by the Windows NT operating system.   Diskeeper cannot defragment any file that is open for exclusive use.   However, Diskeeper can defragment the paging file during boot-time, before Windows NT has started up.   See <u>Defragmenting Paging Files</u> for information about handling paging file fragmentation.

Why doesn't Diskeeper completely consolidate the free space on my partition?

There are several factors that can prevent the free space on a partition from being defragmented:

- A fragmented paging file.   See How can I handle paging file fragmentation? for more information.
- A large number of directories on the partition.   See Why doesn't Diskeeper move directories while Windows NT is running? for more information.
- On NTFS partitions, a portion of the free space on a partition is reserved by Windows NT for the Master File Table (MFT).   See Why don't my files get moved to the beginning of the partition? for more information.

It is important to know that having all of the free space in a single, contiguous piece provides very little (if any) performance benefit.   Free space fragmented into hundreds of pieces will impact disk performance, but free space that's in a few pieces should not have any effect on the performance of your disk.

Why don't my files get moved to the beginning of the partition?

On NTFS partitions, Windows NT reserves a portion of the free space on a partition for the Master File Table (MFT).   This free space is usually most noticeable at the physical "beginning" of the partition (easily seen using the graphic fragmentation analysis display), but space is also reserved for use by the MFT in other areas of the partition.

Since Windows NT reserves this free space for exclusive use, Diskeeper will not move files into these areas of the partition. However, Diskeeper <u>will</u> move files out of this reserved area.

Why don't some of my NTFS partitions appear in the Diskeeper Tree View?

It is necessary for both SYSTEM and ADMINISTRATOR to have full control over a file (or the directory folder it is in)   in order for Diskeeper to have access to move the file. This is because the Diskeeper service runs under the Administrator account, and System access is necessary to safely defragment files. This is a security feature that is governed by the Windows NT C2 security requirements.

If the root-level directory folder does not have SYSTEM and ADMINISTRATOR set for full control (as seen in the Permissions section under the Security tab in the Properties dialog box) Diskeeper will not display the partition in the Tree View under some circumstances.

What are the "Stages" Diskeeper goes through to defragment my partition?

As Diskeeper analyzes or defragments your partition, the lower portion of the Diskeeper display shows several numbered "Stages" as they progress.

The analysis operation consists of two stages.   Stage 0 gathers general information about the number of files and file fragments on the partition. Stage 1 gathers additional, more specific, information and displays the information found.

The defragmentation operation is a bit more complex.   First, it runs an analysis of the partition (Stages 0 and 1 of the analysis).   After the analysis, Diskeeper uses up to seven separate stages, each of which employs a separate proprietary algorithm to optimally defragment your partition.   Then, after the defragmentation stages are complete, the partition is re-analyzed to ensure the display is updated.

How do I determine how often to run Diskeeper on my partition?

There are no set rules on how often you should defragment your disk partitions.   There are many variables that control this, including the level of file activity on your partition, the size and types of files used on the partition, and the amount of free space available on the partition.

However, there are some general guidelines.

- Disks on busy file servers should be defragmented more often than those on single-user workstations.   You may need to run Diskeeper on a server partition as often as every two to four hours to maintain the optimum performance from your Windows NT system.   On a workstation partition though, you may only need to run Diskeeper daily.

- To determine how often to run Diskeeper on *your* partitions, you can use the logging function of Diskeeper to monitor the number of files moved during each Diskeeper run.   See Event Logging for information about logging the names of files that get moved by Diskeeper.

- In general, if Diskeeper is moving fewer than 50 files per run, you are running Diskeeper frequently enough. Diskeeper is maintaining the performance of your Windows NT system at an optimum level.   If the number of files moved during each run is more than 50 or so, or is increasing, schedule Diskeeper to run more frequently.

Why don't my defragmentation jobs all start at the same time?

Diskeeper is designed to defragment more than one disk partition at a time.   However, when the defragmentation of two or more partitions is scheduled to begin at the same time, Diskeeper will start each job separately, in one-minute intervals.   For this reason, you will notice the start times for each Diskeeper job run in the Application Event Log can vary by several minutes.   This is no cause for alarm.

Why doesn't free space reported in the post-analysis (or defragmentation) pop-up match what the Diskeeper text display shows?

Several of the post-analysis and post-defragmentation summary screens include information about the amount of free space available on the partition for defragmentation.   This figure is based on the space available to Diskeeper, but on NTFS partitions this is not necessarily the <u>total</u> free space on the partition.   A certain percentage of the total partition is reserved for the Master File Table (MFT) on NTFS partitions, and this space cannot be used by Diskeeper for defragmenting files.   Because of this, the figure shown in the Diskeeper post-analysis and post-defragmentation summaries on NTFS partitions will not match the total free space figure displayed in the Diskeeper text display (or other utilities like Disk Properties in Windows NT Explorer).

Why didn't the Boot-Time Consolidation move my directories?

The Boot-Time Consolidation feature requires enough contiguous free space to contain the directories on the partition.   For this reason, you should run Diskeeper in one of its online modes before running the Boot-Time Consolidation.

Also, keep in mind that there are two directories that cannot be safely moved, even at boot-time.   The directories are \Recycler and \Recycled.   Because these two directories cannot be moved, the Boot-Time Consolidation operation will likely still leave one or two directories that are not consolidated with the rest of your directories.

New Features!

Diskeeper 4.0's major enhancement over its predecessor, Diskeeper 3.0, is that it permits paging file defragmentation. This greatly increases the effectiveness of disk defragmentation.

Safety

Diskeeper is designed with SAFETY as the highest priority.

To ensure the safe movement of files on the disk, Diskeeper 4.0 uses mechanisms built into Windows NT 4.0 that were developed and implemented by Executive Software, and fully incorporated into Windows NT by Microsoft.

By using these built-in mechanisms, Diskeeper maintains cache coherency, file security and permissions information, and file content integrity no matter how fragmented the files on the disk are.

The foremost design goal for Diskeeper for Windows NT was to make sure that no data is ever lost.   To accomplish this goal Diskeeper uses the following criteria for accessing files:

- the contents of data files are never modified under any circumstances
- only one file is processed at a time, not the whole partition
- each processing pass is independent of the other passes
- no information is stored on any other device or in a "scratch space"
- Diskeeper accesses a file in such a way that no user access can conflict with Diskeeper during the critical portion of the relocation process
- file relocation is aborted if any error is encountered, leaving the file in its original state

Diskeeper was designed to err on the side of caution.   In other words, it only moves a file on the partition when it is absolutely certain that no data will be lost, including file attributes.   The only change to file attribute-type information is the physical location of the file on the partition.   None of the file dates are changed and no other fields in the file record header are used to store Diskeeper information.

Diskeeper never defragments or moves files that are specifically stored at a specific physical location on the partition.

If anything causes your computer to crash while Diskeeper is running, or if you abort the Diskeeper defragmentation run in the middle of the file relocation process, no data is ever at risk.

It is no wonder that Diskeeper is the preferred defragmenter, found on the computer systems at NASA, McDonnell Douglas, Lockheed, Boeing, AT&T, Unisys, Bechtel, E. I. Dupont, Northrop, Caterpillar, and many other companies.

Process Live Disks

It is not acceptable to force users off the disk while performing routine defragmentation.   To do so would be a case of the cure being worse than the disease.   Access to fragmented files is better than no access at all.

The best solution is to defragment on-line with users active on the same disk.   Diskeeper was designed with this in mind.   During most of the time Diskeeper is processing a file in its on-line mode, Diskeeper shares the file with any other users that may access the same file.   The last step of processing the file, however, involves locking the file for a very brief period, a matter of milliseconds.   If another user requests a file that Diskeeper has locked, that request is suspended for the brief period until Diskeeper releases the file.   Then the request is serviced.   There is never an interruption of either process as a result of this delay.

This solution allows Diskeeper to safely defragment most open files, whether they are open for read operations or for write operations.

Note: Due to the Windows NT design, directories and paging files cannot safely be moved on live disks. Therefore, Diskeeper performs these operations at the only safe time, while the computer is booting.

Performance

When running in the "Set It and Forget It" mode, Diskeeper is designed to run in the background, without adversely affecting performance of your Windows NT computer.   Steps have been taken to assure that by default, Diskeeper overhead has the lowest possible impact on system performance.   Diskeeper can be run at the lowest possible priority, using only otherwise unused CPU cycles.   Diskeeper was designed in such a way to ensure it will not interfere with other processes on your Windows NT computer.

However, for cases where you want to defragment partitions more quickly, Diskeeper allows you to increase the defragmentation priority.   Click here for more information about setting the priority for a Diskeeper defragmentation job.

No Operator Intervention

In keeping with the design goals, once Diskeeper has been started in the "Set It and Forget It" mode, it runs automatically in the background, without the need for operator intervention.   It runs indefinitely, unless told otherwise by you.

Efficiency

In its automatic, "Set It and Forget It" mode, Diskeeper for Windows NT is very efficient, using only otherwise unused CPU cycles to perform its work.

A one key design criterion was for the defragmentation process to use fewer resources than using the partition in a fragmented condition.   This criterion has been met in the full version of Diskeeper for Windows NT.

Recording What Diskeeper Does

Diskeeper provides a vast amount of information that you save to disk in one of two ways: You can save the text results of an analysis of your partition, or you can record defragmentation results and other partition information in the Windows NT Event Log.

Click here for information about saving the text results of an analysis.

Click here for information about recording Diskeeper information in the Windows NT Event Log.

Defragmenting a Disk Partition

Diskeeper can defragment your disk partitions in two ways: You can run Diskeeper manually, or run it in the scheduled, Set It and Forget It mode.

Click here for information about running Diskeeper in the Manual Defragmentation mode.

Click here for information about running Diskeeper in the Set It and Forget It mode.

Defragmenting Across a Network

The Windows NT Server version of Diskeeper allows you to defragment disk partitions on all the computers in your network (assuming, of course that Diskeeper is installed on the remote computers).   There is no need for you to run around to every computer on the network − you can do it all from your desk.
Click here for information about scheduling Diskeeper to run on all the computers on your network

Defragmenting Directories

By its very design, Windows NT does not allow directories on a partition to be moved online (when the computer is running and the operating system is fully started).   This is due to data integrity issues related to the way Windows NT maintains directory information while Windows NT is active.   In its online mode, Diskeeper runs while other processes are active on the system, and therefore does not attempt to move directories.   However, Diskeeper does provide a method by which you can defragment and consolidate the directories on your partition at boot-time.

Click here for more information about the Diskeeper Boot-Time Defragmentation feature.

Defragmenting Paging Files

By its very design, Windows NT does not allow a paging file on a partition to be defragmented online (when the computer is running and the operating system is fully started).   This is due to data integrity issues related to the way Windows NT maintains the paging file.   In its online mode, Diskeeper runs while other processes are active on the system, and therefore does not attempt to move the paging file.   However, Diskeeper does provide a method by which you can defragment the paging file on your partition at boot-time.

Click here for more information about the Diskeeper Boot-Time Defragmentation feature.

Getting the Most from Diskeeper

Diskeeper provides a variety of features, all of which are designed to help you get the best performance from your computer. While there are no "hard and fast" rules governing the use of Diskeeper, here are some general guidelines about using these features that will help you get the most from Diskeeper.

When you first install Diskeeper, analyze all the disk partitions on your computer. This gives you good information about the extent of fragmentation on your computer. See Analyzing Fragmentation for more information.

After you have analyzed your partitions, defragment them by running Diskeeper in its Manual Defragmentation mode. This provides the fastest, highest-priority method for defragmenting the files and free space on your partition. See Manual Defragmentation Mode for more information.

After you've run Diskeeper in its Manual Defragmentation mode for the initial file and free space defragmentation, it's time to handle the directories that are scattered all over your partitions. To do this, use the Diskeeper Boot-Time Defragmentation feature. Since directories cannot be moved while your computer is fully up and running, the Boot-Time Defragmentation defragments and consolidates the directories on your partitions while your computer is booting. It is important to defragment your partitions before running the Boot-Time Defragmentation in order to create a contiguous free space for your directories to be moved into. See Boot-Time Defragmentation for more information.

Once your directories have been consolidated, schedule Diskeeper to run in the background in its Set It and Forget It mode. Running in the Set It and Forget It mode, Diskeeper works in the background, keeping your disks in prime condition. See Set It and Forget It Mode for more information.

U.S. Technical Support

Registered users are entitled to 90 days of free telephone support, as well as special upgrade pricing, from Executive Software.   Our free U.S. technical support is available Monday through Friday during the first 90 days from 7:00 A.M. to 5:30 P.M. Pacific time.   If you have not yet registered your Diskeeper for Windows NT purchase, use the registration card in your Diskeeper box and do so now.   Or, register your purchase on-line via our Web site at:

http://www.execsoft.com

Click here to visit Executive Software's Web site:

{button Visit Executive Software,EF(`Connect.exe',"http://www.execsoft.com",1)}

Most technical support questions can be answered from the Technical Support   section of our Web site at the address shown above.

You may also contact our technical support team via the Internet at:

dknt_support@executive.com

or via FAX at:

818-545-9241

Executive Software also makes available unlimited technical support assistance via its support forum on CompuServe.   GO EXECSOFT to access this forum.

If you are within your 90 day free support period, or have purchased telephone support, you can call:

818-547-2050

When your 90 day free support period has expired, you may purchase the support plan which best suits your needs.   Executive Software offers 24-hour, 7-day support plans.   Contact Executive Software to find out which support options are best for you.

Executive Software's address is:

Executive Software
701 North Brand Blvd., 6th Floor
Glendale, California, USA   91203-1242

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access

To store data on, or retrieve data from, a disk drive or other peripheral device. See also file.

Alpha

Alpha is both a high-speed processor and a computer system made by Digital Equipment Corporation (DEC.) The Alpha processor is a RISC (Reduced Instruction Set Computer,) which has a small set of simple instructions, rather than a large set of complex instructions. This has the advantage of much higher processor speeds, because the processor is much simpler and smaller. The tradeoff is that some of the work that would otherwise be done by the processor now has to be done by software.

applet

A small application program that is usually built into an operating system or a larger application program. For example, the built-in writing and drawing programs that come with Windows are sometimes called "applets."

application

A computer [program](#) , which causes a computer [system](#) to perform some useful work for the user.

AutoPlay

A feature of some [Windows](#) applications on [CD-ROM](#) to execute automatically when placed in the drive, or when present in the drive at start-up.

background processing

The execution of certain operations during momentary lulls in the primary (foreground) [process](#) . An example of a background process is printing while a word processor is waiting for keystrokes.

binary

From Latin "bini," meaning two by two and "ary," meaning of, or pertaining to. Computers use the binary number system, which is a way of counting in which only two <u>digits</u> (0 and 1) are used. Contrast with the familiar decimal number system, in which we count with 10 digits (0 through 9.)

bit

Short for binary digit. The smallest unit of information handled by a computer. Like a light switch, a bit is either on or off, which corresponds to a numerical value of one or zero. Larger numbers are expressed by groups of bits. See also byte.

boot

Refers to the initial start-up of a computer, such as when you turn on the computer's power. From the word "bootstrap," indicating the computer "lifts itself by its bootstraps"; that is, it gets itself going.

boot-time

The time during which a computer boots; that is, the computer is starting up and the operating system has not yet taken over control of the computer.

byte

A group of eight bits, which can represent a number from zero through 255, a letter of the alphabet, or a variety of other things.

CD-ROM

Compact Disk Read-Only Memory. A stiff plastic disk commonly used by software manufacturers to distribute software to customers. As the name implies, the original contents of a CD-ROM cannot be changed.

central processing unit (CPU)

The part of the computer hardware that controls the computer's overall operation and performs computations. Most modern CPUs are built into a single integrated circuit (chip.) See also AlphaAlpha, Pentium, x86.

chip

See [integrated circuit](#) .

CHKDSK

A program that checks the integrity of a disk and corrects disk errors such as lost clusters.

client

In a computer network, a computer that uses the services of another computer, called a server. For example, a client can "ask" a server to provide it with needed data, or to print a file for the client. See also server, workstation.

cluster

Smallest addressable unit of space on a disk. A one-byte file will actually use a cluster of disk space. The minimum size of a cluster depends on the size of the disk partition. The FAT file system allows a maximum of 65,536 clusters per partition (16 bits,) which means that the cluster size on a 64-megabyte disk partition is one kilobyte, while a 128-megabyte partition uses two-kilobyte clusters. Thus, the FAT file system can be very wasteful of disk space on large partitions. The NTFS file system does not suffer from this limitation.

contiguous

Adjacent; placed one after the other. A contiguous file is <u>not</u> fragmented; that is, it takes up a single "chunk" of disk space. See also fragmentation, defragmentation.

control file

A file (Diskeep.ctl) used by Diskeeper to keep track of and control scheduled defragmentation of disk partitions. See also Set It and Forget It.

controller

A specialized electronic circuit, which serves as an interface between a device, such as a disk drive, and a computer. See also IDE, SCSI.

CPU

Short for [central processing unit](#).

data

Information, as processed by a computer. Plural of the Latin word <u>datum</u>, meaning an item of information.

database

A collection of related information about a subject, organized in a useful manner that provides a base or foundation for procedures such as retrieving information, drawing conclusions, and making decisions.

datum

Singular of data.

defragmentation

The reduction or elimination of <u>fragmentation</u>, by making files and/or free disk space more <u>contiguous</u>.

device

A machine, such as a printer or a [disk drive](#).

digit

From Latin "digitus," meaning finger. Any of the numbers 0 through 9 in the decimal number system, called a digit because people originally used their fingers for counting. Computers use a [binary](#) number system, which uses only two digits (0 and 1.)

directory

A file that contains a catalog of files and other directories stored on a disk, which allows you to organize your files into groups, making them easier to find.

directory consolidation

A Diskeeper feature which, at boot-time, gathers (almost) all directory entries on a disk partition into a single area on the disk, instead of scattered in many places. The only exceptions are the \Recycler and \Recycled directories, which Windows NT expects to find at a fixed location on the partition. Directory consolidation makes defragmentation more effective than it would otherwise be. Directory consolidation requires sufficient contiguous free space into which the directories can be moved.

disk drive

A [device](#) containing one or more disks, treated as a unit by a computer.

Diskeeper

A [software](#) product that increases [system](#) performance through disk [defragmentation](#).   It safely eliminates [resource](#)-wasting [file](#) [fragmentation](#) by consolidating fragmented files and free space. Diskeeper for [Windows NT](#) is available both in [workstation](#) and [server](#) versions.

diskette

See floppy disk.

domain

In Windows NT, a group of workstations and servers, defined by an administrator, that share a common directory database and allow a user to log onto any resource in the domain with a single user ID and password. Each domain in a network has a unique name.

drive

See <u>disk drive</u>.

drive letter

In Windows and MS-DOS operating systems , the naming convention for *disk drives*, consisting of a letter, followed by a colon. Drives A: and B: are normally reserved for floppy disk drives and C: typically indicates the first hard drive. See also partition.

event logging

The Windows NT process of recording audit information when certain events occur, such as services starting and stopping, users logging on and off and accessing resources. Logged events can be viewed with the Event Viewer utility (in Administrative Tools.)

Event Viewer

A Windows NT utility, which permits the viewing of logged events. See also event logging.

extended partition

A type of partition that permits the limitation of four partitions per disk drive to be overcome. A disk drive may be partitioned into a maximum of four primary partitions, or three primary partitions plus an extended partition. One or more logical drives may be created within an extended partition.

FAT

See file allocation table.

FAT file system

The file system used by MS-DOS and adapted for Windows NT to store information on disks, which makes use of a file allocation table.

field

A subdivision of a <u>record</u> in a <u>file</u>. For example, a record in a customer file may contain a name field, an address field and a phone number field.

file

A complete, named collection of data, such as a program , a set of data used by a program, or a user-created document. See also record, field.

file allocation table (FAT)

A table or list maintained by some operating systems, to keep track of how files are stored on a disk.

file system

The method used by an <ins>operating system</ins>, of naming, accessing and organizing <ins>files</ins> and <ins>directories</ins> on a disk. See also <ins>NTFS</ins>, <ins>FAT file system</ins>.

floppy disk

A removable storage medium , consisting of a small magnetic disk made of flexible plastic, housed in a square protective envelope or cartridge. Originally, floppy disks really were "floppy," because they were enclosed in a paper envelope. Also called a diskette, which is a better name for the more recent design that uses a stiff plastic cartridge. Contrast with hard disk.

formatting

A method of preparing a disk surface for use by placing certain magnetic patterns on it, which are used by the file system in storing and retrieving data.

fragmentation

The word *fragmentation* means "the state of being fragmented." The word *fragment* means "a detached, isolated or incomplete part." It is derived from the Latin "fragmentum," which in turn is derived from "frangere," meaning "break." So, *fragmentation* means that something is broken into parts that are detached, isolated or incomplete.

graphical user interface (GUI)

Pronounced "gooey." A user interface, as used in the Windows and Windows NT operating systems, which uses a mouse and graphic displays to interact with the user, with the purpose to make the computer system easier to use than other operating systems, such as MS-DOS.

hard disk

One or more rigid metal platters, coated with magnetic material. Contrast with floppy disk, or diskette, which is made of plastic. Also used to refer to the physical unit that makes up a disk drive.

hardware

The physical parts of a computer [system](#) , including [devices](#) such as printers and [disk drives](#). Contrast with [software](#).

IDE

Integrated Device Electronics. One of two common types of interfaces between a disk drive and a computer, where the controller is built into the disk drive or into the computer's main board, which eliminates the need for a separate controller card in the computer. See also SCSI .

integrated circuit

Also called a chip. A collection of electronic parts with a specific purpose, built into a single physical package. See also central processing unit.

Intel

Manufacturer of <u>processor</u> <u>chips</u>, known especially for the <u>Pentium</u> and <u>x86</u> <u>processors</u>.

interface

The connection and interaction between hardware, software and/or the user. For example, a disk controller provides a physical interface between a computer and a disk drive. The keyboard, mouse and display are an interface between a computer and the user.

job

A request to have the computer or its [peripherals](#) perform some activity. In relation to [Diskeeper](#), it is a request to have a disk [defragmented](#).

log file

A file that keeps track of certain events as they occur. The Windows NT operating system maintains several log files that can be viewed with the Event Viewer. See also Event Logging.

logical drive

That portion of the space on a <u>disk drive</u> that is considered by the <u>software</u> to be a single unit. In this context, logical means "conceptual." because there is no direct relationship between the name and a physical object. See also <u>partition</u>.

master file table (MFT)

On an NTFS partition, the master file table is a file, which contains information about all other files in that partition. This includes the name of each file, its physical location on the disk, and other information.

media

A collective word for the physical material on which computer-based information is stored, such as a CD-ROM or floppy disk. Media is the plural of medium, but like data is often used in the singular form.

medium

Singular of [media](#).

memory

The computer's temporary working storage, where program instructions and data are kept, permitting the CPU to process the instructions.

MFT

See [master file table](#).

Microsoft

A computer [software](#) company, with its head office in the state of Washington; creators of the [MS-DOS](#) and [Windows](#) [operating systems](#).

MS-DOS

Microsoft Disk Operating System. An operating system designed for a small computer with a single user running one application program at a time.

multitasking

A feature of an operating system, where the computer can work on more than one task at a time. See also *background processing*.

network

A group of computers that are connected together and capable of exchanging data with each other. See also server, client.

network scheduling engine

A [process](#), generated by [Diskeeper](#), which performs the work of updating the Diskeeper [control files](#) on one or more remote computers, without the need for you to individually connect to each computer.

NTFS

New Technology File System. A [file system](#) designed specifically for use with [Windows NT](#).

operating system

A collection of [programs](), which performs system functions and controls the running of [application]() programs and the allocation of [resources]().

pagefile

See [paging file](#).

paging file

An area of a disk that is set aside to hold data intended to reside in the computer's memory. Portions of the paging file are copied to memory as needed. This mechanism requires a much smaller amount of physical memory than would be required if the entire program were to be loaded into memory all at once.

partition

A subdivision of the space on a [disk drive](#) that is treated as though it were a separate physical unit. A computer with only one hard disk drive can have a single partition, often called drive C:, or it can have several partitions, such as drive C:, drive D:, and drive E:. See also [drive letter](#), [primary partition](#), [extended partition](#), [logical drive](#).

Pentium

The name of a type of [processor](), introduced by [Intel]() in 1993. It is the successor to the 80486 and equivalent to the 80586 chip in the [x86]() series.

peripheral device

(Related to *periphery,* roughly meaning "on the outside.") A <u>device</u>, such as a <u>disk drive</u> or printer, keyboard or mouse, connected to and used by a computer.

permission

The ability of a user on a computer system to access or modify files, especially those that he or she did not create. Permissions exist for security reasons, to prevent unauthorized access to sensitive information. The system administrator assigns permissions, or "who has access to what."

platform

The environment, in which a computer system operates, either based on the computer's [CPU](#) or its [operating system](#). For example: the [x86](#) platform, or the [Windows NT](#) platform.

platter

A [disk drive](#) consists of one or more platters, each of which can receive magnetic recordings on both sides. The platter spins like a phonograph record on a turntable.

preemptive multitasking

Also called *time-slice multitasking*. A form of multitasking in which the operating system periodically interrupts the execution of a program and passes control of the system to another waiting program. Preemptive multitasking prevents any one program from monopolizing the system.

primary partition

In Windows and MS-DOS operating systems, the disk space on a disk drive may be divided into a maximum of four primary partitions; or three primary partitions plus an extended partition, which in turn can contain one or more logical drives.

priority

On a [Windows NT](#) system, several [programs](#) can appear to be running at once, even though the [CPU](#) can only process one instruction at a time. With the help of the [operating system](#) , the CPU processes a few instructions from one program, then a few instructions of the next program, and so on, over and over. Without priority assignments, each program would be given about the same amount of time in each "time slot", but by assigning priorities, the more important programs can be given longer time intervals than the less important ones, allowing them to complete faster.

process

A program, along with the system resources the program requires to run. A process represents a unit of resource ownership and work to be done. The operating system creates processes to keep track of resources and to ensure the proper scheduling of tasks.

processor

See central processing unit.

program

A set of instructions that tell a computer what to do. Synonym: software.

RAID

Redundant Array of Independent Disks. A method of combining several disk drives to make one large partition. Typically used on a network file server to achieve faster access, greater protection against disk failure, or both.

record

A collection of related data items, treated as a unit. For example, in a file containing information about a company's customers, one record would consist of the particulars (name, address, phone number, etc.) of one customer. See also field.

registry

A database that contains information about current hardware settings, installed software, user preferences and associations between file types and applications that access those files.

resource

Any part of a computer system, such as a <u>disk drive</u>, printer, or <u>memory</u>, which can be used by a <u>program</u>.

SCSI

Small Computer System Interface. One of two common methods of interfacing disk drives and other devices to computers. See also IDE.

server

On a computer network, a computer that makes resources available to other computers (clients or workstations.) For example, all the computers on a network can be set up to share a single high-speed printer, which is connected to the server. Usually, the server is faster and more powerful than the client computers connected to it.

service

A [process](#) that performs a specific system function and often provides an *application programming interface* (API) for other processes to call. [Diskeeper](#) uses a [Windows NT](#) service, which allows Diskeeper to run in the [background](#) while other [applications](#) are running.

Set It and Forget It

A term that was created by Executive Software and is a registered trademark and hallmark of the company.   A "Set It and Forget It" product can operate transparently (unseen by the user) and in the background (concurrent with other applications).   Once a schedule is set up for its operation, it thereafter performs its functions at predetermined times, without further intervention or attention from the user or administrator.

software

A generic term for computer programs, taken collectively. Contrast with hardware. Software can be categorized into application software and system software.

SMS

System Management Server. A [software](#) product from [Microsoft](#), which permits the [system administrator](#) on a [Windows NT](#) [network](#) to do such things as install and run new software on different computers on the network, all from a single location.

system

The collection of one or more computers and [peripheral devices](). Sometimes used as a synonym for [operating system](), or the combination of [hardware]() and [software](), as a logical unit.

system administrator

The person in charge of maintaining a multi-user computer [system](#) .

system file

In general, a file that is part of, or accessed by, the operating system. Diskeeper's graphic analysis display shows certain system files in green, particularly the master file table (MFT) and several other files that cannot safely be moved by Diskeeper (or any other defragmenter). These are not the files that make up the Windows NT operating system , but the files that make up the NTFS file system.

task

A [program](#) or portion thereof that is run as an independent entity.

utility

A [program](#) that provides basic services or functions.

volume set

In [Windows NT](#), a single [logical drive](#), which is composed of up to 32 areas of free space on one or more [disk drives](#). Volume sets can be used to combine small areas of free space on one or more disk drives into a larger logical drive, or to create a single large logical drive out of two or more small disks.

Windows

An operating system introduced by Microsoft in 1983, with a graphical user interface and which runs on MS-DOS based computers. See also Windows NT.

Windows NT

An [operating system](#) released by [Microsoft](#) in 1993 (NT stands for New Technology.) It has a similar [graphical user interface](#) to [Windows](#) , but it does not run over [MS-DOS](#) and has been designed specifically for computer [network](#) environments.

workgroup

In Windows NT, a workgroup consists of one or more computers that do not participate in a domain and are therefore responsible for their own security and administration.

workstation

A computer that has been set up for use by an individual typically connected to a [network](). The term is also used to indicate a [client]() computer, in contrast with a [server]().

x86

Symbol to represent a series of [CPU](#)s, manufactured by [Intel](#) and others, including model numbers 8086, 80286, 80386, 80486 and 80586 ([Pentium](#).) All of the CPUs in this series have certain characteristics in common, which permits [software](#) to be written that will run on any of them.

That's Us!

The following people all had hands-on participation in the development of Diskeeper 4.0:

- Raffi Abnous
- Grant Akopyan
- Joan Barnes
- Myron Chew
- Jane Davey
- Ernest Duran
- Zack Gainsforth
- John Joseph
- Sopurkh Khalsa
- Mark Kirby
- Bert Kleinschmidt
- Tim Lathrop
- Vaughn McMillan
- The Three Musketeers
- Gary Quan
- Andy Staffer
- Peter Verhoeff

. . . and many others, especially field test sites, to whom we say thank you!

Raffi

Raffi is one of the famed "Three Musketeers".   He is also known as the "Orkin Man", since he enjoys eradicating bugs.   He's the real golfer of the group (the rest of us are beginners compared to him), and he's our official putting coach.   He says he enjoys chess, but he doesn't seem to enjoy losing to Ed.   (Of course he can still beat Tim at any golf game they can create.)   Raffi is the only one in the group that has a old-fashioned ticker tape machine next to his desk to keep track of the stock markets.   When he hits it big we expect him to take us out for shish kabobs.

Grant

Grant is also one of the famed "Three Musketeers".   (He was the first, in fact.)   He's learning all there is to know about building Setup programs and other product packaging issues.   He also knows his way around bitmaps (he's another artistic one) and string tables.   He has literally worked his way up from the ground floor in order to get into software development.   He claims he started here as a young man, but after a few years he feels <u>much</u> older–we think it's because he doesn't ever go home early (or perhaps not at all, we're not sure, since he's here when we arrive and he's here when we leave).

Joan

Joan (also known as Joanie) runs the Field Testing of all Executive Software products.   She sends and receives more e-mail in a day than many people do in a month, but manages to somehow keep it all straight and (almost always) sent to the right people.   She juggles hundreds of sites testing multiple products on multiple operating systems, yet makes it seem easy.   She's an avid bungee-jumper and skydiver, when she's not performing freestyle motocross jumping.   (OK, I made the last sentence up.)

Myron

Myron is one of the famed "Three Musketeers".   He's the King of GUIs and engines and all sorts of other stuff. He also likes computer games, Tai Chi, and playing tennis.   He still hasn't had a chance to play a round of tennis with Zack to determine the rightful owner of the prized Executive Software Cup.   (Koosh® Tennis, anyone?) We're happy for his recent marriage, since he seems to smile a lot more, and yet he still puts in the same number of hours as before he was married.   Looks like she's a good influence.

Jane

Jane is now the official boss in the Development Division.   She's always been the "fixer" of the group, and has always pretty much run the show − only now it's official.   She, too, has been around computers since they were really big water-cooled monsters (well, not <u>that</u> early, but she knows what the insides of a Cray look like).   She likes trivia, taking care of her dog (Angus, the largest dog you'll ever meet) and cats (Koki and Hillary, two of the most interesting cats around), Science Fiction Sunday, her new house, photography (allegedly), and telling us that "Cyrmu" means "Wales".

Ernest

Ernest is the artistic one around here.   He rules the Bitmap Kingdom and runs the product packaging area.   This means he oversees the building of the installation procedures, and does a lot of other things that make it possible to get Diskeeper out the door and into your hands.   He still instigates the occasional Koosh® basketball game (sorry, no more jump shots while hopping on one foot singing Danny Boy − building management complained).   He's also the fisherman of the group, and we're waiting for him to put on the hip waders and go for a few trout in the fountain across the street.   You should see the "Trout of the Day" wallpaper he comes up with.

Zack

Sorry - No Picture Available

Zack, (also known as Z-Man), is always in a good mood (so much so that it bothers the rest of us).   He loves computers, physics, SCUBA, and weird science.   He's been instrumental in the development of the deeper parts of Diskeeper, and has had a lot to do with the long-term future of Diskeeper, all the while learning to love rainy weather.

John

John is known around here   as "Mr. Boot-Time", and he led the Diskeeper 4.0 software engineers.   He's been working with computers since back in the days when hard drives were bolted to the floor on reinforced concrete foundations (what was known as the "Pizza Oven").   He's forgotten more about computers and operating systems than most people will learn in their lifetime(s).   He enjoys all sorts of toys and gadgets (you should see his toybox). He also enjoys model rockets (he makes Saturn 5 rockets from scratch) and about anything to do with flying machines.   He is currently regrouping after the less-than-successful initial flight of the SR-71 Blackbird model rocket.

Mark

Mark supplies the gang with all the high-tech things we need to do our jobs.   We're not really sure just <u>what</u> that is, but he keeps it all straight for us.   Without Mark, this place wouldn't run nearly as smoothly as it does.   He handles all the messy paperwork and administrative stuff so well we sometimes forget it exists.   He can also swap out a hard drive in the blink of an eye, and not even get this hands dirty doing it.   Top that off with being a very good writer and the owner of a really cool Jeep®, and what else can you say?   Oh yeah − many would say he's the best-looking one of the group.   (But don't tell Gary because he'll get angry, and you don't want to get Gary angry).

Bert

Bert is the picky one of the group, but that's a good thing.   He's responsible for making sure Diskeeper does what the developers say it will.   Bert decides when Diskeeper is ready to go into the public's hands, and can fight off a mob of hungry marketing people with a smirk and an icy stare.   (Must be all the hot sauce.)   He spends his spare time taking things apart and putting them back together.   Sometimes they even work when he's done (even if there's welding involved).   He's into "tech" stuff − automotive tech, mechanical tech, electrical tech, electronic tech, and sewing, of course.

Tim

Tim (the Lizard) likes beating Vaughn at pool, driving fast, and staying warm.   He also enjoys Koosh® paddleball with Sopurkh.   He's a tenacious bug hunter who can break any software he gets his hands on, and blue screen a computer faster than you can say "hemoglobin".   And please join us in rejoicing the arrival of his new brown leather jacket.   He's no longer the hollowed-out former shell of himself that he was when he lost the old one.

Vaughn

Vaughn is the writer of the gang and has written about Diskeeper since before Windows NT existed (although he turned over the bulk of the Diskeeper 4.0 writing to Peter). He enjoys very little. That's just the way he is − no sense of humor whatsoever. Yeah, right. He's a retired rock-and-roll guitarist who got tired of the construction inspection business − so of course now he's into software development and writing Easter Eggs. Go figure. He likes to play pool (although Tim can usually teach him a thing or two) and is also involved in ground crew duties for several really cool hot-air balloons.

The Three Musketeers

"The Three Musketeers" is a collective name for Grant, Raffi, and Myron.   These three worked very closely together during the development of Diskeeper 3.0,and became quite the team.   During the development if Diskeeper 4.0, they did somewhat different tasks, but they remain a tight team, and you seldom see one take a break without the others following.   Their multi-national backgrounds (Russian Armenian, Persian, and Chinese) has resulted in many very interesting conversations.

Gary

Gary (or Big G)   is the "Strongest Software Engineer in the World".   He lifts weights to get out from under the pressure of software development.   (Must have been a <u>lot</u> of pressure − he can lift a small car.)   Few people around can tackle tough coding problems like Gary − he's amazing. He's a great person to take to lunch because he understands most foreign menus and he'll clean up all your leftovers.   He's also one of the nicest, most genuine people you could ever hope to know.   (I had to say that − he's bigger than me.)   Gary's been around Executive Software longer than any of the rest of us (although quite a few of us have been here longer than Windows NT has existed).

Andy

Andy, the head of our Research area, is the father of Diskeeper for Windows NT, 4 kids, and all of the other Executive Software Windows NT products.   He also racks up quite a few Frequent Flyer Miles going back and forth between here and Redmond.   Other than being an All-American Guy, he's a Hungarian-born, Canadian citizen, legal US Alien, adding to the international nature of the entire Diskeeper team.

Peter

Peter is the most recent addition to the Diskeeper development team.   He has taken over a large part of the technical writing duties with great patience and perseverance.   (He's become accustomed to working with a Koosh® paddleball game going on over his head.)   Of course, in keeping with Executive Software's international flavor, he's from Holland.   He hasn't yet started his campaign to move our Technical Division to Frazier Park, but we think it's only a matter of time before he does−and who can blame him?

Sopurkh
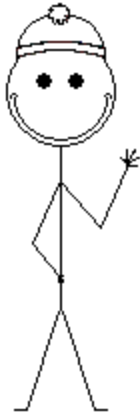
Police Artist Sketch

Sopurkh is a relative newcomer to the group.   He deals with development testing and localization for all our products.   He has been localizing for so long, he can sometimes be heard muttering to himself in German, French, or Japanese.   He's our token vegetarian, and he's the originator of Extreme Koosh® Paddleball.   He's going to USC part-time − this semester his hardest class was Sailing.   (We expect him to take Underwater Basket Weaving next semester if the the class is not already filled.)   Actually, he wants to finish some economics and language courses and fulfill his lifelong dream of being a Pirate.   Even though he only works here part-time, it sure seems like more.

Thank You!

cache

From the French word *cacher,* meaning "to hide." A temporary storage facility designed to speed things up by providing information to software that would otherwise have to be obtained from a slower medium . Caches exist for Web browsers, disk drives and CPUs . See also cache memory .

cache coherency

A condition where the [data] contained in the [cache memories] in a computer with multiple processors is kept consistent at all times.

cache memory

In computers, a cache is a small amount of very fast memory that is placed close to (or inside) the CPU chip , in order to improve performance. The cache memory holds copies of recently accessed data . Because computer programs often run the same instructions repeatedly, many times the CPU will find the data it needs in the cache and therefore will run faster because it does not need to access the computer's main memory.

Service Pack

A collection of [software](#) used to issue corrections and updates to software between major releases.

European Technical Support

Registered users are entitled to 90 days of free telephone support, as well as special upgrade pricing, from Executive Software.   Our free European technical support is available Monday through Friday during the first 90 days from 8:30 to 17:30 GMT.   If you have not yet registered your Diskeeper for Windows NT purchase, use the registration card in your Diskeeper box and do so now.   Or, register your purchase on-line via our Web site at:

http://www.execsoft.co.uk

Click here to visit Executive Software's Web site:

{button Visit Executive Software,EF(`Connect.exe',"http://www.execsoft.co.uk",1)}

Most technical support questions can be answered from the Technical Support   section of our Web site at the address shown above.

You may also contact our technical support team via the Internet at:

tech.support@execsoft.co.uk

or via FAX at:

+44 (0) 1342 327390

Executive Software also makes available unlimited technical support assistance via its support forum on CompuServe.   GO EXECSOFT to access this forum.

If you are within your 90 day free support period, or have purchased telephone support, you can call:

+44 (0) 1342 327477

When your 90 day free support period has expired, you may purchase the support plan which best suits your needs.   Executive Software offers 24-hour, 7-day support plans.   Contact Executive Software to find out which support options are best for you.

Executive Software's address is:

Executive Software

Kings House, Cantelupe Road

East Grinstead, West Sussex   RH19 3BE

England

Should I use Diskeeper on RAID arrays?

Definitely. Diskeeper supports all levels of software- and hardware-based RAID arrays.

RAID arrays are often used to increase system performance. In a RAID array of four disk drives, for example, a file can be accessed up to four times as fast as on a single drive. This is because the file is spread between the four drives, and all four drives can be accessed at the same time. Because of this, the file can be retrieved much more rapidly. However, these file parts can become fragmented on the individual drives, just like the files on a single disk drive, which reduces the speed advantage gained by RAID. In fact, the effects of fragmentation can be more obvious in a RAID array than in a single disk drive.

Diskeeper defragments RAID arrays just as it would single disk drives. Diskeeper sees the RAID environment just as the file system does. That is, Diskeeper defragments the virtual drive. Diskeeper improves the speed and performance of a RAID environment by eliminating wasteful and unnecessary I/Os from being issued by the file system. In our four-drive array example, it would defragment the pieces of the file on each separate drive as though they were separate files. Diskeeper moves pieces of a file as directed by the RAID controller.