Application Storage Manager™
Windows NT®/2000 Edition

ASM System Guide

ASM for Windows
Version 5.20

P/N: 313473401

LICENSE NUMBER

ASM uses the License Server to store and validate ASM licenses. During installation, you are prompted to choose whether you are installing an evaluation copy of the product or a licensed copy of the product.

To install ASM as an evaluation copy, select the evaluation option on the licensing page of the setup wizard. Installing an evaluation copy of ASM will not require you to enter any licensing or license server information. The evaluation version of ASM is valid for 30 days. ASM automatically sets up an Alert notifying you of the pending expiration of your evaluation version each time the ASM service starts.

Once you purchase a license for ASM, you must contact your sales representative to obtain the product license number. A license number based on your machine ID and other licensing requirements you provide them will be sent to you for activating ASM. Enter that license information using the New License Wizard in the License Server Administrator.

Once the ASM license is entered in the License Server, use the Setup wizard to update the licensing information for ASM. Select the Edit product license information option in the Setup wizard and enter the name for the License Server computer into the wizard on the Licensing Information page.

For further information about registering license information in the License Server, refer to the *License Server System Guide*.

TABLE OF CONTENTS

LIST OF TABLES

PREFACE

APPLICATION STORAGE MANAGER AND DISKXTENDER

The Windows NT/2000 edition of Application Storage Manager™ (ASM) was developed for StorageTek by OTG Software and is based on their DiskXtender (DX) product. With ASM and a full line of world-class tape drives and tape libraries, StorageTek can deliver **A COMPLETE SOLUTION** for cost-effective storage management of your standalone and distributed Windows NT/2000 systems.

BENEFITS

DISKXTENDER allows you to extend the capacity of NTFS volumes by automating migration of files to storage media. DISKXTENDER uses separate media services to manage media in storage devices, so that all drive, library, and media specific issues are handled and optimized by the media service (like MEDIASTOR). This enables DISKXTENDER to focus specifically on the management of files, allowing clients to simply save and retrieve files on any extended NTFS volume.

With DX, many terabytes of data storage can be made available on an NTFS volume without adding to the physical capacity of the hard disk where the volume is located. DX can be used to represent the contents of multiple pieces of media as folders on a single volume, keeping track of the exact location of all files on media. CD-ROM, Erasable-Optical (also called Magneto-Optical), WORM, DVD, and Tape media can all be managed easily and effectively, using a variety of file systems.

DISKXTENDER adds value to the NTFS file system, enhancing Windows native capabilities, by providing file migration services. Because of the design of DISKXTENDER, file migration can be added without losing any Windows features. Windows NT/2000 still manages all issues like security, long file name support, and network connectivity.

DX provides a rule-based system for file storage management. Rather than simply migrating all files to media without distinction between files, DX allows you to set criteria that govern which files will be stored where. Using the rules you create, DX manages file storage locations in the background, moving files to media and purging their data to make space on the extended drive. To the end user, however, all files appear to be located on the NTFS drive extended by DX.

DX provides comprehensive file management capabilities, a single point of administration, and scheduling features to optimize system performance. Time-consuming processes that compete for system resources – such as media restore, media compaction, and file movement to media – can be set to occur at convenient times. DX also monitors system warnings and errors, and can be configured to send alerts to specific users or computers.

This system guide explains how to configure and utilize DISKXTENDER to most effectively manage your file system migration. It contains all the necessary information to achieve the best results for implementing and customizing your automated data storage solution.

DOCUMENTATION CONVENTIONS

Consistent formatting is used throughout the *DISKXTENDER System Guide* to represent certain information.

Table 1: Documentation Conventions

THIS CUE:	REPRESENTS:
`monospaced text`	Characters that must be typed on your screen exactly as they appear in this document.
<SMALL CAPITALS>	Keys on your keyboard used in combination or sequence. For example <ALT>+B means to hold down the <ALT> key while pressing B, and <ALT>, F, X means to press and release each of the keys in order: first <ALT>, then F, then X.
ALL CAPITALS	Directory names, filenames, and acronyms.
italics	References to manual titles, chapter titles, and section headings; placeholders; and emphasis.
WARNING  Precautionary note between two lines.	Warnings about actions that could have adverse affects on the functionality of the DX system.
NOTE  Explanatory note between two lines.	Additional information needed as you follow the step-by-step operations in this manual.

CHAPTER SUMMARY

The following table summarizes each chapter of this document:

Table 2: Chapter Summary

CHAPTER:	DESCRIPTION:
Chapter One: Introduction on page 1	This chapter provides a brief overview of the system, including its concepts and components.
Chapter Two: Working in the Administrator on page 19	This chapter describes the Administrator interface and basic functionality.
Chapter Three: Extended Drive Administration on page 43	Extended drive properties are discussed, as are troubleshooting functions such as alerts. In addition, use of the report generator and report layout editor are discussed.
Chapter Four: DX Computer Administration on page 75	This chapter discusses DX computer properties and troubleshooting functions such as logs and event viewing. In addition, procedures for using the Repair Disk function are provided.
Chapter Five: Reports on page 127	This chapter discusses how to run DX reports, what information is contained in them and how to set up and save custom layouts for your DX reports.
Chapter Six: Backup and Recovery on page 161	This chapter discusses the functions available in DX to allow you to effective back up your DX system and procedures for restoring your backup system in the event of disaster or failure.
Chapter Seven: Explorer Add-Ons on page 189	This chapter discusses the functions available through the Explorer Add-ons. In addition, procedures are provided for accessing and executing explorer add-ons functions.
Chapter Eight: Removing DX and DX Components on page 217	This chapter provides detailed instructions for removal of DX components (extended drive, media folders, media), and procedures for uninstalling DX, the Remote Administrator and the Explorer Add-Ons.

RELATED DOCUMENTATION

Refer to the following additional documentation:

- DISKXTENDER Data Management Guide
- DISKXTENDER System Guide
- MEDIASTOR System Guide if using OTGMS as a media service
- SANXTENDER System Guide if using SANX to migrate file data over a SAN
- ACSLS documentation if using ACSLS as a media service
- Tivoli Storage Management documentation if using TSM as a media service.

ONLINE HELP

Help is available online from any DISKXTENDER dialog box. For a description of the dialog box, press the <F1> key. A Help window appears, outlining the dialog box parameters and fields.

A knowledgebase help file with error descriptions, tech notes, software notes, fixed/known bugs is also available in the OTG DISKXTENDER program group on the Start menu. All DX2000 guides, including this one, are also available in PDF format on the installation CD.

CHAPTER ONE

INTRODUCTION

DISKXTENDER (DX) is a storage management system that provides support for multiple media types, flexible media and data organization, and rules-based file migration. DX accomplishes this through an easy-to-navigate interface, and transparent communication with storage locations and device management software.

DISKXTENDER allows you to extend the storage capabilities of NTFS volumes by using DX file migration services to move files from the NTFS volume to other, less-expensive storage media. For example, users on your network may typically save data to an NTFS volume on your Windows NT/2000 file server. You can vastly expand file storage capabilities by extending one or more of the file server's drives with DISKXTENDER. File data on a drive extended by DX can be moved to media through a media service (e.g., to tape in a library managed by OTG's MEDIASTOR) without affecting the file listing seen by the end user.

You are the architect of the DISKXTENDER system. DISKXTENDER allows you to leverage your existing hardware configuration or create a new one. Powerful features of DX, combined with an easy-to-use graphical user interface, allow you to fine-tune a file storage strategy for any type of application requirement. Because DX supports several media services, media types and file systems, you can select a storage configuration most suited to your available resources and your storage needs.

Before designing a storage strategy, you should be comfortable with DISKXTENDER terminology and concepts. In addition, many of the issues discussed in this system guide should be carefully planned before implementing a DX storage strategy. Take the time to read all sections, as this will help you attain the best performance, functionality, and organization for your storage solution.

This section identifies key terminology and concepts that are vital for you to understand. Included are descriptions of DX modules, conceptual and practical definitions, as well as guidelines for planning and implementing your DX storage strategy.

A DISKXTENDER GLOSSARY

To make it easier for you to follow the discussion of DX architecture in this chapter, here are brief descriptions of key terms used in the DX Concepts section. You can either read this glossary first or refer to it as needed while you read about DX. For an in-depth overview of DX, see *DX Concepts* on page 4.

Table 3: DISKXTENDER Glossary

TERM:	DEFINITION:
Cluster	A processing environment consisting of two or more server computers and a RAID array, connected together in such a way that they behave like a single computer, and so that the server computers share the single storage device.
Data Management	DX manages the location of the file data for DX files. DX can manage the contents of a file separately from the file tag for that file. The file tag for a DX file is always displayed on the DX extended drive. In the background, transparent to the user, DX controls the location of the file data for each file managed by DX.
Drive	A drive is a hardware device through which media can be read from or written to.
Extended Drives	An extended drive is a hard drive, or partitioned part of a hard drive on the computer where DX is installed. That drive must be formatted with the NTFS file system. DX expands or "extends" the drive by moving files from the hard drive to storage media (based on parameters you set) and then purging the file data for those files (also based on parameters you set). This process creates the illusion that the space available on the hard drive is much larger than it really is – making the drive space appear to have been "extended."
Fetch	The process of retrieving file data from storage media when a user requests the file. Specifically, a fetch is moving the file data from the media back to the extended drive.
File Data	A file's data is the contents of the file.
File Tag	A file tag is the identifying information for a file. The file tag includes such information as file location, file attributes, file size, and file age. This is sometimes also referred to as "metadata", though true metadata includes the file tag and other file information.
File Migration	File migration is the process of moving files to and from the extended drive and storage media. DX moves files to media using parameters configured through move groups and move rules. DX retrieves files from media through client file requests and configured prefetches.

TERM:	DEFINITION:
File System	A file system is software that provides an interface for saving and retrieving files on storage media. File systems control all aspects of media management, including directory/file structures, data layout, and data transfer.
Hard Drive	A hard drive is a stationary piece of media.
Hardware Device	A hardware device is a piece of equipment that holds and spins a magnetic or optical disk and reads and writes information to it.
Jukebox/ Library	A jukebox or library is a hardware device containing one or more removable media drives, shelves for pieces of media, and a mechanism for moving pieces of media between the shelves and the drives. The terms "jukebox" and "library" are interchangeable. In most instances in this manual, the term "library" is used to refer to libraries or jukeboxes.
Logical Cluster Name	The network identifier of a clustered environment. Because a cluster functions as a single element, users access the logical cluster name via the network, rather than any of the individual servers in the cluster itself.
Logical Media	A "logical" piece of media is a piece of media that is defined by its location on a piece (or pieces) of media rather than by the physical constraints of the media itself. For example, a network share that shares a single folder to the network could be treated as a piece of media in DX. In contrast, a RAID device, which has multiple drives, could also be treated as a single piece of media if the entire device is shared as a single network share.
Media	Media refers to a physical medium on which data is written and from which data can be retrieved. Depending on the type of media, the medium may be different and the information may be recorded in different ways. In most instances in this manual, the term "media" refers to the storage media to which DISKXTENDER files are migrated.
Media Pool	A media pool is a reserve of pieces of media available for use with a particular extended drive.
Media Service	A media service provides access to the media to which DX migrates files. In some cases, the media service is a network share. In other cases, a media service is a device management service that will retrieve a specific piece of media and mount the media in a device such as a library drive when requested to do so.

TERM:	DEFINITION:
Media Type	The type of a piece of media is determined by the composition of the media and the method used to record information on that media. Some examples of media types are optical media, CD-ROM media, DVD-RAM media, and tape media.
Network Attached Storage (NAS)	Network Attached Storage is logical media that has been shared to the network to allow network users to access the media. DX can point to any network share as a Network Attached Storage media service.
NTFS Volume	An NTFS volume is a piece of stationary media or a partition on a piece of stationary media that has been formatted with the NTFS file system.
OTG MEDIASTOR (OTGMS)	OTGMS is a device management package that can be used as a media service by DX. OTGMS has the ability to manage retrieval of media in a wide variety of hardware devices.
Removable Media Drive	A removable media drive is a drive where different pieces can be inserted and removed as needed, such as a CD-ROM drive.
Removable Media	Removable media is media that must be mounted in a drive before it can be accessed. Removable media can be inserted and removed as needed to allow for access to multiple pieces of media.
Stationary Drive	A stationary drive is a drive where the same piece of media is always mounted, such as the hard drive on your computer.
Stationary Media	Stationary media is media that is always mounted in a drive and cannot be removed without removing the entire drive.

DX CONCEPTS

The architecture, components, and data management tools of DISKXTENDER are discussed in this section. For an overview of each of the following concepts, see the following sections:

- *Event Scheduling* – see page 14
- *Client Connectivity* – see page 17

DISKXTENDER COMPONENTS

DISKXTENDER is comprised of several components, or modules and each have specific functionality within the system. Several of these modules are discussed briefly in the sections that follow.

DiskXtender Data Manager Service

The DISKXTENDER Data Manager Service is a Windows NT/2000 service that runs on the computer where DISKXTENDER is installed. All media, schedule, and extended drive management is coordinated by the DX Data Manager. The DX Data Manager service uses two auxiliary drivers, the DxSpy driver, and the DxSpyRec driver to monitor and report file activity on the extended drive. These drivers watch for changes in the folders designated for DX file migration services, intercept requests for migrated files, and track the addition, modification, or deletion of DX files. The DX Data Manager moves, purges, and deletes files on the extended drives according to the file move, purge, and delete rules that have been set for the extended drives. The DX Data Manager communicates with computers offering media services (hardware device management) to retrieve files that need to be fetched from media and to send files that need to be saved to media.

DX Data Manager functionality can be managed through the DX Administrator, either on the DX Data Manager machine or from any remote installation of the DX Administrator.

OTG License Server

Licensing information for your DX system is managed on the OTG License Server. The License Server is the program through which the licenses for your OTG products are registered and maintained. The OTG License Server program is included on the DISKXTENDER CD, and can be installed on the DX computer or on a separate computer, as long as that computer is visible to the DX computer through the network.

Use the Edit product license information option in the Setup wizard (accessed through the OTG DiskXtender program group) to point to the License Server computer once your DX licensing information has been registered in the License Server.

DX Administrator

The Administrator allows you to view and configure the underlying structure of the DX system, providing a single interface for managing multiple DX computers and

the extended drives on those computers. Through this module, you can manage all major aspects of the DX system:

- Media services connectivity (connectivity to storage media or to device management software that manages hardware devices containing storage media)
- Drive saver and timeslice settings (for drives in the storage devices managed by the media services)
- Functionality of extended drives (the NTFS volumes for which DX provides data management services)
- Functionality of the DX service, to include setting options and alerts, and viewing statistics.

The Administrator has an intuitive "tree" view where DX extended drives and the configuration items for those extended drives are grouped as sub-trees for ease of use.

All aspects of extended drive and DX service functionality can be configured through the Administrator. You can assign pieces of media to media folders on an extended drive and then define rules to control the management of files in the media folder. You can set up schedules to control when events, such as file migration and processing of media management tasks, occur. You can configure alerts to send messages alerting a particular user or workstation to DX errors or warnings relating to the extended drive. In addition, you can view event, warning, and error logs and run reports on various aspects of DX system functionality.

Enterprise (Remote) Administration

Regardless of whether you are running a full installation of DX or only the Remote Administrator, the Administrator interface for DX can be used to configure any DX computer visible on the network (provided security settings allow access). Because enterprise (remote) administration capability is automatically installed when you install DISKXTENDER, you can remotely administer any DX computer from any other DX computer. You can also use the DX Remote Administrator Setup to install only remote administration components, if that is all you need on the administration computer. DX (full installation) needs only to be installed on computers containing the NTFS volumes that DX will use as extended drives. It is important to be sure, however that the same version of DX (or DX Remote Administrator) is installed on both the administering computer and the remote DX computers it is being used to administer.

Online Help

DX contains context-sensitive help links that provide instructional help and examples. The Online Help is automatically installed with DX and with the DX Remote Administrator). Press the <F1> key at any time to get help on the currently displayed dialog box, window or wizard page. You can also access the online help

from the program group in the Start menu. The program group also provides access to the OTG Knowledge Base.

Explorer Add-ons

DISKXTENDER includes a utility that can be installed on clients that are using files on DX extended drives to allow file and folder management functions to be performed from the Windows Explorer on the client workstation. When you right-click on a file or folder in the Explorer window on the client workstation, a DISKXTENDER option appears on the shortcut menu.

Explorer Add-ons can be used to view file properties, such as the actual file size, the file status (i.e., fetched or purged), and the DX attributes for the file. You can view file properties on many files within a media folder at once using the Explorer Add-ons. You can also run file reports, enable or disable direct read, and purge files using the DX Explorer Add-ons.

Reports

DISKXTENDER contains a reporting feature that can be used to track system statistics. You can create various reports of system activities, including extended drive information, media information, media services, and DISKXTENDER settings in the Windows NT/2000 registry. In addition, the reporting function allows you to create and save custom layouts for your reports, and to choose the layout you want when the report it is run.

System Backup and Recovery

DISKXTENDER contains several functions that can make creation and/or maintenance of a comprehensive backup and recovery plan easier. DX allows you to create backup files for your system registry and for extended drive data. In addition, if you use a clustered environment to manage fault-tolerance for your system, DISKXTENDER can be installed and run on a clustered environment, allowing for automatic fail-safe of your DX system.

Command Line Utilities

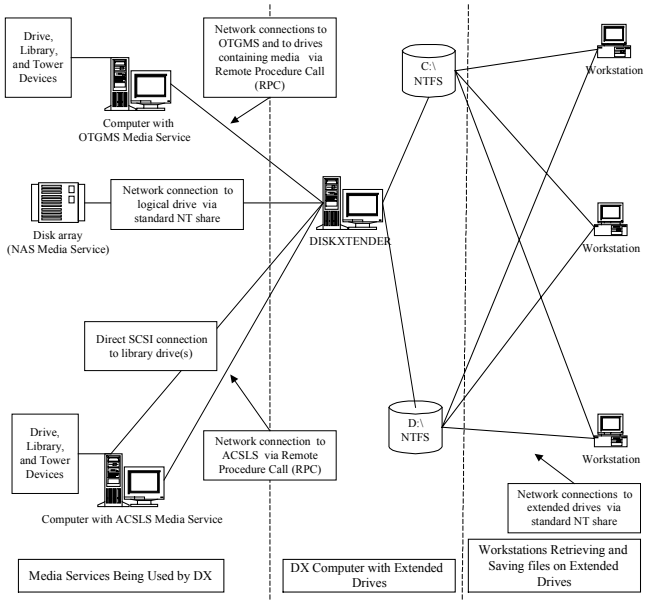
DISKXTENDER includes several utilities that allow you to perform device management independently. These utilities are located in the `\OTG DISKXTENDER\BIN\` directory, and are run from the command prompt.

DISKXTENDER'S DISTRIBUTED STORAGE MODEL

DISKXTENDER is one component of a distributed storage system. Within this system, DX is responsible for managing the movement of data on NTFS volumes to a pool of storage media. Once a media service has provided access to media, DX communicates directly with the media to read and write data and perform media tasks.

Various media services can be responsible for providing access to media pools. Four types of media services are available for use with DX: Network Attached Storage (NAS), OTG MEDIASTOR (OTGMS), StorageTek's ACSLS media services, and Tivoli Storage Manager (TSM). DX connects with these media services either through a network share or through Remote Procedure Calls (RPC). DX transfers files to the media provided by the media services and sends requests for pieces of media to the media services as needed.

Figure 1: DISKXTENDER Architecture



This architecture allows you to set up the components of your storage solution on several computers and avoid the bottleneck of a single-server/multiple-client architecture. You can configure remote storage of files distributed across a network, while maintaining a high level of scalability and administrative flexibility.

DX monitors activity on extended NTFS volumes and then communicates with media services for media to be retrieved as needed. DX relays each request for a piece of media to the appropriate media service, and the media service mounts the media so DX can retrieve or store files, or carry out media tasks. DISKXTENDER transparently manages the connections between DX and the media services, and the movement of files between the extended drive and the media. The client (i.e., end

user) connection to the NTFS volume is managed entirely by Windows NT/2000; DISKXTENDER is not involved in client connectivity at all.

This configuration allows you as the administrator to "extend" the capacity of hard drives on your network servers, seamlessly to the end user. The end user saves files to and retrieves files from the NTFS volume, unaware that that volume has been extended by DX. Because clients connect to Windows NT/2000 rather than DX, the extensive connectivity offered by Windows NT/2000 remains in effect. Any client that can connect to a Windows NT/2000 server can access files on an extended drive.

MEDIA SERVICES

When you configure a DX computer, you must configure media services for that computer before you can move files to media. Media services provide access to media. When you configure a media service in DX, you point to the location where the media for the media service resides and, where appropriate, to the device management software that controls the device(s) where the media will be accessed.

DX manages all functions relating to the transfer of information to and from media. The only role of a media service is to place pieces of media in a location where DX can work with the media. DX performs all movement and fetching of files and all media tasks through direct communication with media and media drives.

When DX needs a piece of media, it sends a request to the appropriate media service for that media. If the media service is a network share (NAS media), the media is already available and DX can proceed with the function that needs to be performed.

If the media service involves a device management product, the media service will cause the device being managed to retrieve the media, or will prompt the administrator of the media service to insert the appropriate piece of media. For example, if OTGMS is being used to manage an optical library, OTGMS will cause the picker arm of the library to retrieve the correct piece of media and insert that media in a drive where the media can be read from or written to. Once the media is in the drive, DX can write files to the media, fetch files from the media, or carry out media tasks such as formatting or labeling the media.

EXTENDED DRIVES

An extended drive is an NTFS volume (hard drive) from which DISKXTENDER provides file migration services, moving files to media and fetching files from media according to the parameters you set. Frequently used files can be kept on the NTFS volume, while less active files can be moved to storage media. It is the addition and use of the storage media through DX that "extends" the space on the NTFS volume, by moving files to storage media, and then purging the file data, while making the file appear to still reside on the extended drive.

To a client retrieving files from a drive extended by DX, all files, whether on the extended NTFS volume or on the storage media, appear to be present on the NTFS volume. According to move and purge rules you configure, DX moves files to removable media and then purges the file data from the extended drive. When the

file data is purged, DX leaves a file "tag" on the extended drive containing file information, such as the size and time and date of creation or modification. The file tag also contains an attribute, left by DX, that points to the location of that file on storage media. When the extended drive is viewed through Windows Explorer, the entire file appears to still be stored on the hard disk of the extended drive, even if the file data has actually been purged.

Every DX computer must have at least one extended drive that defines relationships between directories, media, and ultimately to where new or modified files are moved.

File Migration

All files that are written to DISKXTENDER are initially saved to the NTFS volume. New/modified files are then moved to storage media and purged from the NTFS volume as specified in the move and purge rules that apply to the files. Files are also retrieved from media and stored on the NTFS volume automatically by DISKXTENDER. This movement of files to and from media is referred to as file migration.

One of DISKXTENDER's main performance advantages lies in the ability to configure your system so DISKXTENDER maintains frequently used files on faster access, fixed media (hard drive) whenever possible. You should carefully plan extended drive size, and move and purge rules around application needs, anticipated volume, and available time/hardware for migration processing.

Scheduled file moves and prefetches prevent system bottlenecks resulting from read and write contention on the same DX computer. With a large enough extended NTFS volume, the DX computer can process all client read requests at full speed, processing moves for new/modified files and scheduled prefetches at a later, less active time.

Different aspects of file migration are controlled in different ways in DISKXTENDER:

- Fetch requests are automatically processed as quickly as possible.
- Prefetch requests are configured for each extended drive by selecting the files to be prefetched. Prefetch requests are then processed according to the Prefetch schedule.
- Deferred fetch requests are queued requests that are created during inactive fetch schedule times. When the fetch schedule becomes active, the deferred fetch requests are processed and retrieved at that time.
- Move rules control which files are moved to media, or more accurately, which files are written to the move list for migration to media. The move list is updated during drive scans and processed when a Move files to media activity schedule is active. Media Activity schedules can be configured so that time and system resource consuming activities take place during reduced traffic times.

Fetch Files from Media

DISKXTENDER provides virtually limitless background mass storage services by creating the illusion that all files on an extended drive are actually on the NTFS volume to which clients are connected. In reality, some files on the volume have been moved to media and purged from the NTFS volume. When a file has been moved to media and then purged, DX leaves behind a file "tag" which contains only the file details (size, creation date, etc.) and the location of the file on DX media. When viewed through Windows Explorer, all proper file details (i.e., correct size, date, etc.) appear.

When a request is issued for a file, the file data may or may not be present on the NTFS volume. If the file is present, DX allows Windows to handle the file request. If only the file tag is present on the NTFS volume (i.e., file data has been moved to storage media and purged from the volume), DX retrieves the file and completes the request. When a file is retrieved, this process is referred to as a "fetch."

Prefetch Files from Media

DISKXTENDER has a prefetch utility that allows you to schedule file retrieval. You can designate which files should be fetched to the NTFS volume and schedule when the file retrieval will occur. Any files that you know will be needed can be marked for prefetch so that they will already be present on the NTFS volume when they are requested.

You can schedule a prefetch request to occur once at a set time, to reoccur at set times, or to be processed immediately. Prefetching files at low traffic times frees system resources and speeds read request response during high traffic times. When a file is retrieved in response to a configured, scheduled prefetch request, this process is referred to as a "prefetch."

The Prefetch Request Manager, in the Tools menu in the Administrator, can be used to schedule, configure and manage prefetch requests.

NOTE ✍

Prefetches will fetch all requested files to the extended drive, to include files marked for direct read.

Deferred Fetch Requests

If a client attempts to retrieve a purged file when the Allow fetches from media schedule is inactive, DX cannot fetch the file at that time. DISKXTENDER contains an extended drive option that allows you to queue file requests when the Allow fetches from media schedule is inactive. This option, Defer fetch requests if fetch is disabled, is available through the Options tab on the extended drive Properties dialog box. If enabled, DX will queue all file requests made during an inactive fetch schedule as deferred fetches. DX then processes all deferred fetches when the Allow fetches from media schedule becomes active. See *Extended Drive Settings - Schedule option* on page 51 for more information on Allow fetches from media schedule.

Move Files to Media

New or modified files remain on the NTFS volume until they have been moved to storage media and purged. You control the timing of file moves through move rules and schedules. When the extended drive is scanned, DX checks for files that are eligible for move. If a file is eligible, DX adds it to a move list. Whenever a Move Files to Media schedule is active, DX processes the move list, writing each file on the list out to media. When a file is copied out to media, this process is referred to as a "move."

SPACE MANAGEMENT

Part of managing an extended drive involves managing space on the extended drive. Ideally, files that will be retrieved frequently should remain in their original format on the drive, whereas files that will not be retrieved can be purged to file tags once they are moved to media, leaving more space for frequently accessed files. In order to manage more files than would be actually able to fit on the extended drive, you need to configure space management rules.

Space management rules allow you to control what files are kept immediately available on the extended drive and what files are purged. Using DISKXTENDER as your data management system allows you to automate not only the movement of files to storage media but also the purging and deletion of migrated files from the extended drive.

Purge Rules and Delete Rules enable automation of file data truncation and file data deletion based on specific aspects of files, which you determine and configure.

- Purge rules control when files are truncated on (or purged from) the extended drive. Files are purged either during a drive scan or whenever extended drive capacity is within the range set by the purge watermarks.
- Delete rules control when files are deleted from the extended drive and from any storage media to which they have been moved.

Purge Files

The term 'purge' is used to describe the process of truncating file data on the extended drive for files that have been moved to media. When a file is purged, it is replaced with a file tag that references the file's location on media. Purging occurs either during an extended drive scan or whenever the extended drive reaches a particular capacity, depending on how you choose to configure your purge rules. In the properties for each extended drive, you can set the watermarks that determine when purging based on drive capacity begins and ends. Purge rules are configured to control which files are purged on drive scan or moved to the purge list that is processed when the watermark is reached.

You can purge files based on file age. Purge rules can be used to dictate file purge based on create time, last access time, or last modification time. This process is performed automatically by DX in the background, transparent to client applications.

NOTE

You may also configure your move rules to purge files immediately after they have been moved to media.

Delete Files

Delete rules allow the system administrator to remove files from storage based on the same parameters as used in move rules and purge rules. However, delete rules actually delete files from the extended drive and from media. When a file is deleted from the extended drive, the file tag is deleted from the extended NTFS volume and the file data is marked for deletion on the media. This means that the file data will either be deleted immediately from media or, (for optical or tape media formatted with OTG file system) will not be transferred to a new piece of media when the media is compacted. You can also configure secure file delete as an extended drive property option, which will overwrite any deleted files on tape and optical media, making them completely unrecoverable even before compaction.

These rules can be used, for example, to help manage archival of particular files kept in order to comply with legal requirements. You could create a delete rule that deletes all files in a particular directory that you are not legally required to keep. As long as the files fit the legal criteria, they are backed up to media by DX and remain in the directory. Once the files no longer meet the required criteria (e.g., the files reach a certain age), however, DX can automatically delete them in accordance with a delete rule.

MEDIA MANAGEMENT TOOLS

DISKXTENDER provides several tools that simplify the management of DX media.

COPY MEDIA MANAGER

DISKXTENDER has a Copy Media Manager that you can use to view and manage copy media tasks. You can assign the label copy task to media and view the status of existing copies. You can also promote a piece of copy media to original status. You can access the Copy Media Manager by opening it from the Tools menu in the Administrator.

MEDIA PREPARE MANAGER

DISKXTENDER has a Media Prepare Manager that you can use to assign the format and label media tasks to several pieces of media at once. You can select pieces of media in the system and assign either or both of these tasks to them from one centralized interface. You can access the Media Prepare Manager by opening it from the Tools menu in the Administrator.

MEDIA TASK QUEUE MANAGER

DISKXTENDER has a Media Task Queue Manager that you can use to view and manage scheduled media tasks. Tasks can be removed, added, promoted, or demoted using the Media Task Queue. All tasks assigned to media in the DX system can be managed from the queue. You can access the Media Task Queue Manager by opening it from the Tools menu in the Administrator.

PREFETCH REQUEST MANAGER

DISKXTENDER has a Prefetch Request Manager that you can use to schedule prefetch requests and to manage scheduled requests. Requests can be created, modified, or deleted using the Prefetch Request Manager. All prefetch requests in the DX system can be managed from the Request Manager. You can access the Prefetch Request Manager by opening it from the Tools menu in the Administrator.

EVENT SCHEDULING

DISKXTENDER provides scheduling for many system events, such as moving files to media, media copy updates, scheduled media task processing, prefetching files, and drive scans. This allows time-consuming processes to occur at convenient times such as nights and weekends, thus providing more efficient use of system processing during active times. Scheduling system events during inactive times ensures that the events do not compete with network clients for system, drive or library resources. Schedules can be defined, modified, and deleted through the Administrator.

MEDIA ACTIVITIES

A media activities schedule can be created for DX. Separate schedules can be set up for each extended drive. Schedules are configured in the Schedule Properties dialog box, which can be accessed from the Properties dialog box for the extended drive.

Move Files to Media

This schedule controls when a move list on an extended drive is processed and files on the list are moved out to media.

Process Scheduled Media Tasks

This schedule controls when media tasks that were given a “scheduled” value are processed. All tasks for a piece of media are processed, and then tasks for the next piece of media in the media queue are processed. Media are processed in the order they are listed in the Media Task Queue Manager.

Update Copy Media

When this schedule is active, copies of original media in the DX system are automatically updated to match the piece of original they are copies of. Copy media are created by assigning the label copy task to blank media.

Allow fetches from media

When this schedule is active, user requests for purged files (no longer resident on the extended drive) can be carried out. By default, this schedule is always active. Some enterprises, however, require that fetch access to files on media be restricted at certain times of the day. This media activity schedule option allows you to configure that kind of time-based restriction, if necessary.

Prefetch Requests

Prefetch requests are scheduled separately from other media activities, during prefetch request configuration. Flexible scheduling options are available for scheduling prefetch requests. Prefetch requests are scheduled in the Prefetch Request Manager.

Any files that you know will be needed can be marked for prefetch so that they will already be present on the NTFS volume when they are requested. You can schedule a prefetch request to occur once at a set time or to reoccur at set times, or you can configure the request to be processed immediately. Prefetching files at low traffic times frees system resources and speeds read request response during high traffic times. When a file is retrieved in response to a configured, scheduled prefetch request, this process is referred to as a "prefetch."

EXTENDED DRIVE SCAN

Extended drive scans inventory the contents of the extended drive and determine what files are to be written to the move and purge lists. Files will not be moved or purged, even if the extended drive reaches capacity or the Move files to media activity reaches a scheduled time, unless they are listed on the move list or purge list. The primary purpose of drive scans is to write files that qualify for move rules with an age delay to the move list. Files that qualify against move rules with no age delay are typically written to the move list as soon as they are saved to the extended drive.

If you configure any move rules or purge rules to have age-delays, you *must* perform regular extended drive scans to update the move and purge lists. If any of your move and purge rules use a file age exception to delay move and/or purge of files, you should set a regular drive scan schedule to make sure that all appropriate files are written to the move and purge lists.

WARNING

While files qualifying for a move rule with no time delay are automatically added to the move list, file-sharing issues or sharing violations can prevent files from being added to the move list when appropriate. DX must have full access to a file in order to obtain information required for the move list. If the file is open or is otherwise being accessed by a program or user, DX cannot add it to the move list.

Because files may not be added to the move list due to file-sharing issues, regular drive scans are required to be sure that all appropriate files are written to the move list when they qualify, and as such, are being written out to storage media (in coordination with your Move files to media schedule). DX allows you to force drive scans at any time, and to set a regular schedule for drive scans. Because drive scans for very large extended drives can be time consuming, and to make sure files due to be added to the move list are not currently being accessed, you may want to schedule your drive scans to occur during times of low extended drive and system traffic.

In addition, when you remove a piece of media from the extended drive, you must run a drive scan to complete removal of the media and remove the files on the media from the drive.

Forced Drive Scans

An option is available on the extended drive shortcut menu that allows you to force an immediate drive scan of the extended drive. A drive scan started using the Force Drive Scan command is started immediately, independently of any drive scan schedule you may have in place. You can use this command to run a drive scan if you remove a piece of media and would like to refresh the extended drive contents immediately.

Scheduled Drive Scans

You can also schedule drive scans to occur automatically. Drive scans are scheduled separately from other events (in each extended drive's Properties dialog box in the Administrator). Because drive scans are time-consuming yet system-critical events, more flexible scheduling options are available to allow you to schedule scans more or less frequently as appropriate.

CLIENT CONNECTIVITY

The extended drive is a partitioned volume, which resides on a computer using Windows NT or Windows 2000 as the operating system. The volume is shared through a network, so that it is visible and accessible to other users. The client computers that save and retrieve files to and from the shared drive can use virtually any operating system to read and write the extended drive files.

FILE STREAM SUPPORT

Because NTFS supports file streams, many applications now take advantage of file streams to store their data. In addition, MAC and NFS file systems use file streams to store private data.

Support for file streams ensures that DISKXTENDER can protect all application data in files (not just the primary data). File streams are moved and fetched along with the primary file data. In addition, file streams can be restored from storage media (along with primary file data) for disaster recovery purposes.

File stream properties can be viewed through the Explorer Add-ons, if the file selected contains file streams.

CLIENT FILE SYSTEM SUPPORT

Because DX uses the extended NTFS volume to store files before migration, and is capable of migrating file streams, all clients that can connect to an NTFS drive can store and access DX files on an extended drive.

FAT (File Allocation Table)

DX2000 supports FAT as a read-only file system. Operating systems that use FAT as a file system include Windows 3.x, Windows 95, and Windows 98, Windows NT and Windows 2000. DX cannot format media with the FAT file system and since FAT is supported as read-only, FAT media cannot be added to move groups.

NTFS (Native Transport File System)

Clients using Windows NTFS can read and write files on DX extended drives. Windows NT/2000 uses NTFS or FAT as file systems.

MAC (MacIntosh)

MacIntosh and Apple computers use the MAC file system. Because DISKXTENDER protects file stream data, client connectivity drivers for MAC can be used to connect to DX extended drives.

NFS (New File System)

UNIX and LINUX applications have NFS as a file system. Because DISKXTENDER protects file stream data, client connectivity drivers for NFS can be used to connect to DX extended drives.

CHAPTER TWO

WORKING IN THE ADMINISTRATOR

Because DISKXTENDER (DX) is a Windows-based package, the same easy, intuitive navigational standards apply to all of its components. The Administrator provides a user-friendly interface that allows you to easily create and configure DISKXTENDER components as well as manage DX computer and extended drive properties.

The Administrator has an intuitive "tree" view that displays the underlying structure of the DX system. Each extended drive appears as a primary tree node and the configuration items for those extended drives are grouped as sub-trees for ease of use.

The Administrator view is the interface through which you can configure all aspects of extended drive and DX functionality. Using the Administrator you can:

- View and configure all registered and connected DX computers.
- Create an extended drive and configure/manage its properties.
- Create media folders for each extended drive.
- Assign pieces of media to media folders and then define rules to control the management of files in the media folder.
- Set up schedules to control when events, such as file migration and processing of media management tasks, occur.
- Configure alerts to send messages alerting a particular user or workstation to DX errors or warnings relating to the extended drive.
- View event, warning, and error logs and run reports on various aspects of DX system functionality.

DX Administration can be performed on the same computer where DX is installed or from a remote workstation running Windows NT or Windows 2000. This chapter explains the basic layout of the Administrator, as well as the general functionality.

Included are explanations of window features, and methods for carrying out system operations.

STARTING THE ADMINISTRATOR

Starting the Administrator allows you access to extended drives and their associated media and media information. You can connect to local or remote DX computers through the Administrator and extend drives on those computers. Using the Administrator, you can manage DX file organization and directory structure, manage media, and set event schedules on multiple DX computers.

Upon successful connection to one or more DX computer(s), the tree view of the Administrator displays all configured DX components in a tree-like structure. The tree structure contains a primary Extended Drive node with two secondary nodes for each extended drive: Media Folders and Available Media.

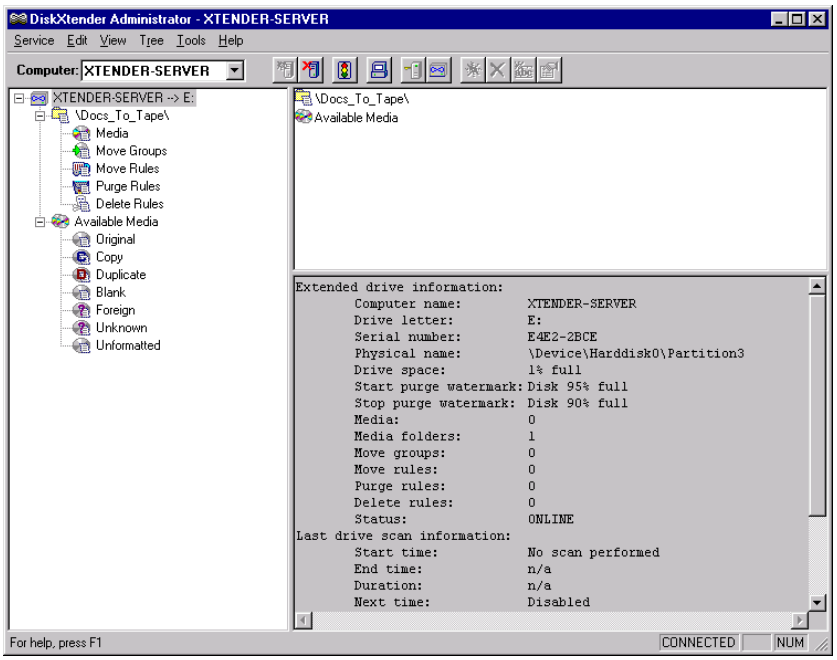
NOTE ✍

The Extended Drive and Media Folders nodes will not appear until extended drives and media folders are created. Media will not appear until you configure a media service and allocate media to the DX extended drive.

To open the administrator:

➲ From the Windows Start menu, select Programs and then OTG DISKXTENDER. From the DISKXTENDER menu, select Administrator. The Administrator window appears.

Figure 2: DISKXTENDER Administrator



When the Administrator opens, it automatically connects to all registered DX computers. If this is a full installation of DX (as opposed to a Remote Administrator installation) the local computer is automatically registered, and therefore automatically appears in the Administrator. Once the connection has been made, the window displays information relevant to each connected DX service.

If you want to administer the DX service on computer(s) other than those currently connected, you must register those DX computers through the Administrator. For more detail on registering DX computers, see *Registering a DX Computer* on page 34.

THE ADMINISTRATOR WINDOW

The Administrator window is made up of several components: the main menu, the Computer drop-down list box, a toolbar and a status bar. The menu bar contains the main menu commands and can be found at the top of the window. The Computer drop-down list box can be found just below the main menu on the left, and the toolbar can be found just below the main menu to the right of the Computer drop-down list box. The status bar can be found at the bottom of the window.

The main portion of the window is for navigation and information display. The main portion of the window is split into three panes. The left pane of the window contains the tree-like structure from which most commands are performed. The top right pane displays the contents of the item currently selected in the tree. The bottom right pane displays a description or detailed properties of the item selected.

Split bars separate the panes of the Administrator window. These split bars can be moved to change the size of each pane.

To move the split bar:

➲ Drag the bar to its new location.

THE TREE VIEW: EXPLORING DX

The left pane of the Administrator window contains a tree showing all extended drives configured for registered DX computers. Commands for managing DX functionality can be accessed from the tree. When you right-click on a tree node, a shortcut menu containing commands for performing DX functions appears. The shortcut menu commands will vary, depending on what item you selected in the tree view.

Each node in the tree indicates whether it is expandable; that is, whether it contains items beneath it. A plus sign (+) marks a node that is expandable. Once a node has been expanded, the plus sign changes to a minus sign (-), indicating that it has been expanded and can now be collapsed.

To expand a node:

➲ Click the plus sign, or double-click the item.

To collapse a node:

➲ Click the minus sign, or double click the item.

If a node appears with neither sign, that means it currently contains no items within it. For example, if the Blank node of the Available media tree does not have a plus (+) or minus (-) sign in front of it, there are no Blank media available for that extended drive.

THE CONTENTS VIEW: NODE DETAILS

The top right pane of the Administrator window contains the contents of the node currently selected in the tree on the left. These contents include the same information displayed underneath the node in the tree, if the node is expanded. For example, selecting the Original node of the Available Media tree will list all available formatted and labeled media in the Contents view. The same information is listed underneath the Original node if that node is expanded. You can select an item either in the tree view or in this Contents section to make the appropriate commands available.

THE DESCRIPTION VIEW: ITEM DETAILS

The bottom right pane of the Administrator window contains details about the item currently selected in the tree on the left. This section provides helpful information about the current configuration and settings. For example, if a move rule is selected, the description view shows the following information about the move rule: directory, file type, size and attributes settings, and move settings.

TOOLBAR

The toolbar contains buttons that provide quick access to many of the Administrator commands and features. For more information on using the toolbar, see the *Toolbar* section on page 28.

MAIN MENU

The main menu contains a list of menus with commands for carrying out functions in the Administrator. Although functions are easily performed using shortcut mouse clicks, all functions can be performed through the main menu commands as well. When you select a node, the Edit menu changes to contain the same commands available on the shortcut menu for that node.

COMPUTER DROP-DOWN LIST

The Computer drop-down list displays the name of the currently active computer. You can use the drop-down feature of this text box to activate a different DX computer in the Administrator. Selecting a computer from this list has the same effect as clicking on or highlighting a different computer in the tree view of the administrator.

In order for a computer to appear in the Computer drop-down list, the computer must be registered through the administrator. For additional information on registering DX computers to add them to this list box, see *Registering a DX Computer* on page 34.

STATUS BAR

The status bar is located at the bottom of the Administrator window and displays information about a command or toolbar button.

To show or hide the status bar:

➲ From the DX Administrator's View menu, select Status Bar. A checkmark beside the command indicates that the status bar is displayed.

WORKING IN THE ADMINISTRATOR

The following sections describe several features and functions available in the Administrator, as well as basic navigation through DISKXTENDER. For information on unfamiliar techniques, see *Documentation Conventions* on page viii or refer to your Windows user manual.

COMMON INTERFACE FEATURES

In most DX dialog boxes, the Cancel button closes the dialog box and stops a process without implementing or saving any changes made.

All DX wizards provide Next, Back, Finish, and Cancel buttons. Some DX wizards also have Help buttons. The following table describes each of these buttons.

Table 4: Common Wizard Buttons

BUTTON:	DESCRIPTION:
< Back	Returns to the previous page (disabled on the first page).
Next >	Moves to the next page in the sequence (replaced by Finish button on final page).
Cancel	Discards any information provided, terminates the process and closes the window.
Finish	Applies the settings entered on all pages and executes the function for which the wizard was designed, according to your selections throughout the wizard.
Help	Opens online help related to the current wizard.

Some DX components have a status bar at the bottom of the window. Translations of certain commands or important messages to the user appear on the status bar.

A checkmark next to an option, whether that option is located in a dialog box or in a menu, signifies that the option has been enabled. Clicking a checked option will clear the checkmark and disable the option.

USING THE KEYBOARD WITH THE ADMINISTRATOR

DISKXTENDER is designed for use with a mouse for quickly accessing commands and features. However, a combination of mouse and keyboard techniques can be used for efficiently carrying out any action in DX. Keep in mind that keys are often used in combinations or sequences. The following table describes how key combinations and key sequences are represented in this system guide:

Table 5: Documentation Conventions for Keyboard Techniques

KEYBOARD TECHNIQUE:	DOCUMENTATION CONVENTION:	EXAMPLE:
Key combination	Keys separated by a plus sign should be pressed at the same time.	The example, <SHIFT> + <F1> means to hold down the < SHIFT > key while pressing the <F1> key.
Key sequence	Keys listed in sequence and separated by commas should be pressed in sequence.	The example, <ALT>, <F>, <A> means to press and release each of these keys in order: first <ALT>, then <F>, then <A>.

Shortcut Keys

There are certain keys that can be used through the DX Administrator to carry out functions.

Table 6: Shortcut Keys

KEY:	DESCRIPTION:
<DEL>	Press this key to select Delete when there is a Delete button or command available in the interface. This key can also be used to delete selected items in the Tree view or in lists.
<F2>	Press this key to select Edit when there is an Edit button available in the interface. This key can also be used to open the Properties dialog box for selected items in the Tree view or in lists. You can also double-click an item to edit it.
<INS>	Press this key to create a new item wherever a New option is available.
<CTRL>	Press and hold this key while selecting items in a list to select multiple non-sequential items.
<SHIFT>	Press and hold this key while selecting or pressing the up or down arrow key to select sequential items in a list.
<TAB>	Press this key to move from one option to the next in a dialog box. (For more information, see *Using the Keyboard in a Dialog Box* on page 26.)

Using the Keyboard with Menus

The DX Administrator has a main menu below the title bar. The menus hold most commands available in DX. To carry out commands, highlight the appropriate item in the tree view, select a menu, and then choose a command from that menu.

Choosing the command carries out the action. Every menu, as well as every item in a menu, has one underscored letter or number, which is used for carrying out keystroke commands. Instead of using the mouse to open the menu and choose a command, you can utilize the underscored letters.

NOTE ✍

In Windows 2000, the underscores that indicate shortcut keys in menus and dialog boxes are not visible by default. To view the shortcut keys, press the <Alt> key.

To perform commands using only the keyboard:

1 Press the <ALT> key to activate the menu bar.

2 You have the following choices:

- Press the underscored letter for the menu you want to open.
- Use the right and left arrow keys to highlight the menu you want to open, and then press <ENTER>.

The selected menu opens. The first command is selected by default.

3 You have the following choices:

- Press the underscored letter (or number) of the menu command you want to perform.
- Use the up and down arrow keys to highlight the menu command you want to perform, and then press <ENTER>.

The command is performed.

NOTE ✍

Shortcut key combinations are listed to the right of some menu items. You may be able to use this combination instead of opening the menu and choosing a command.

Using the Keyboard in a Dialog Box

The <TAB> key can be used in any dialog box to move from field to field. This includes text boxes, checkboxes and option buttons, drop-down lists and list boxes, and command buttons. Another method of moving through a dialog box is to press and hold the <ALT> key, while typing the letter underscored in the option name or group name.

The following table lists the keyboard commands for selecting each type of field.

Table 7: Selecting Field Types In A Dialog Box

FIELD:	KEYBOARD ACTION:
Command Button	Press <TAB> to move to the button, then press the <SPACEBAR> or <ENTER>. If the button has an underscored letter, press and hold the <ALT> key while typing the underscored letter.
Option Button	Press <TAB> to move to the group of options, and then use the arrow keys to select the appropriate option button. If the option has an underscored letter, press and hold the <ALT> key while typing the underscored letter.
Checkbox	Press <TAB> to move to the checkbox, and then press the <SPACEBAR> to select or clear the checkbox. If the checkbox has an underscored letter, press and hold the <ALT> key while typing the underscored letter.
Text Box	Press <TAB> to move to the text box, then enter or delete text as appropriate. Use the arrow keys to move between characters in the box. To select text, place the cursor by the first character to be selected and press and hold the <SHIFT> key while pressing the appropriate arrow key.
List Box	Press <TAB> to move to the list box, then use the up or down arrow key to scroll to the item to be selected. Or, type the first letter of the item to be selected; the first item that starts with that letter is selected.
Drop-down List Box	Press <TAB> to move to the list box, then press <Alt> + the down arrow key to open the drop down list. Use the up or down arrow key to scroll to the item to be selected. Press <Alt> + the up arrow or the down arrow to select it.

USING A POINTING DEVICE WITH THE ADMINISTRATOR

The Administrator was designed for easy use with a pointing device. The following table lists terms used in this manual that refer to use of a mouse as a pointing device. If your pointing device is not a mouse, or if you have configured your mouse for use with the left hand, you may need to reinterpret procedures that use these terms.

Table 8: Pointing Device Conventions

TERM:	DESCRIPTION:
Point	Move the pointer to an item.
Click	Point to an item. Quickly press and release the left mouse button to select an object.

TERM:	DESCRIPTION:
Double-click	Point to an item. Quickly press and release the left mouse button twice to activate a function.
Right-click	Point to an item. Quickly press and release the right mouse button to select an object.
Drag	Point to an item. Press and hold the left mouse button down. Move the pointer to the target location and release the button.

For most items (such as a node in the tree), when selected with the right mouse button, a shortcut menu appears, consisting of the same commands found in the Edit menu. This feature provides a quick and easy method of performing many DX actions.

Shortcut Menus

For most items in the Tree and Contents views of the Administrator, you can access a shortcut menu by right-clicking on the item. You can then use either mouse button to select commonly used functions from the shortcut menu that appears.

Drag and Drop

You can drag any item in the Tree or Contents view to the Delete toolbar button to delete it. You can also drag and drop media to a media folder or move group from the Original Media list to add it, or drag media from the media folder or move group to remove it.

Toolbar

The toolbar contains buttons that provide quick access to many of the Administrator commands and features. To identify the function of a button, point to the button with the mouse. The button's function appears in the status bar at the bottom of the window.

To show or hide the toolbar:

➲ From the DX Administrator's View menu, select Toolbar. A checkmark beside the command indicates that the toolbar is displayed.

Figure 3: DX Administrator Toolbar

Table 9: DX Administrator Toolbar Buttons

BUTTON:	NAME:	MENU OPTION:	FUNCTION:
	Connect	From the Service menu, select Connect	Connects to the selected DX computer.
	Disconnect	From the Service menu, select Disconnect	Disconnects from the currently active DX computer.
	Service Manager	From the Tools menu, select Service Manager	Opens Service Manager.
	Register Computer	From the Service menu, select Register	Displays the Register Computers dialog box, which allows you to register DX computers.
	Configure Media Services	From the Service menu, select Configure Media Services	Opens the Configure Media Services dialog box, which allows you to add, delete and configure media services.
	New Extended Drive	From the Service menu, select New Extended Drive	Opens the New Extended Drive Wizard, which allows you to create an extended drive.
	New Object	From the Edit menu, select New	Displays a dialog box that allows you to create a new object. The dialog box that appears is determined by the current selection.
	Delete Object	From the Edit menu, select Delete	Deletes or removes the selected object.
	Rename Object	From the Edit menu, select Rename	Allows you to rename the selected object.
	Object Properties	From the Edit menu, select Properties	Displays the Properties dialog box for the selected object.

REFRESHING THE ADMINISTRATOR WINDOW

Refreshing updates the contents of the display window and repaints everything in the window. The Administrator window is refreshed when each of the following occurs:

- After each command is performed.
- Each time a node in the tree is expanded or collapsed.
- When you press <F5>. (This is considered a forced refresh.)
- When the time specified for automatic refresh frequency has expired.

CONFIGURING AUTO REFRESH FREQUENCY

You can configure the frequency of the automatic refresh of the Administrator. The default refresh rate is 5 seconds.

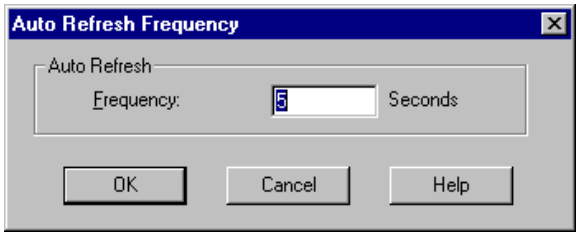
To enable or disable auto refresh:

➲ From the Tree menu, select Auto Refresh.

To change the auto refresh frequency:

1 From the Tree menu, select Auto Refresh Frequency. The Auto Refresh Frequency dialog box appears.

Figure 4: Auto Refresh Frequency Dialog Box



2 In the Frequency text box, enter the appropriate number of seconds between refreshes.

3 Click OK.

EXTENDED DRIVES

The DX Administrator tree view displays all current DX extended drives for the connected DX computer(s). Under each extended drive, the available media and the media folders created for the extended drive are listed. Under each media folder appears the move groups, and move, purge, and delete rules for the media folder.

MEDIA FOLDERS

Extended drives contain media folders to logically group the media. Media folders provide a virtual directory structure for media. The media folder is a virtual directory that defines a point in the directory tree (from the root of the extended drive) where the media's files are located. In order to be used by DX, media must be assigned to a media folder.

Under each extended drive, a node appears for each media folder created for that drive. Under each media folder is a Media node listing all media assigned to that folder. Media folders and their media are listed in alphabetical order. A folder icon represents each folder and a media icon represents each piece of media.

MOVE GROUPS

A move group is a subset of the media in a media folder. When you configure file migration, you select target media for each move group and a target move group for each move rule. Selecting a move group specifies that only media in that move group will be used to store files moved under that rule. At least one move group must exist in order to create move rules. This being the case, DX allows you to create Move Groups at the same time you create Move Rules if necessary.

In the tree view, move groups are listed under the Move Groups node underneath each media folder.

MOVE RULES

Move rules regulate the movement of files to media. When a move rule is created, you specify which files should be moved and which target Move Group of media will be used to store them. You can either select an existing Move Group or you can create one at the time you create the Move Rule. At least one move rule must be configured in order for files to be moved to media.

Move rules are created from and listed in the Move Rules node, underneath each media folder.

PURGE RULES

Purge rules regulate the reclamation of file space on the extended drive. When a purge rule is created, you specify which moved files should be purged from the extended drive and when. Purging files reclaims file space on the extended drive. You have two options with respect to purging files. You can enable the Purge with move option in your move rule(s), or you can create separate Purge Rules for each media folder.

Purge rules are created from and listed in the Purge Rules node, underneath each media folder.

DELETE RULES

Delete rules can be added to permanently delete files from the extended drive and from media. A delete rule defines a specific folder, file type, and file age. Delete rules are carried out during an extended drive scan, at which time all files matching the configured delete rules are automatically and permanently deleted from the extended drive and from the storage media containing those files.

Delete rules are created from and listed in the Delete Rules node underneath each media folder.

NOTE ✍

Once files are deleted using a Delete rule, DX can no longer access those files. Whether the files are physically deleted on the media is determined by the properties of the media itself (optical rewritable, tape, DVD-RAM).

AVAILABLE MEDIA

The Available Media node contains all media allocated for the extended drive not yet assigned to a media folder. Media is grouped by type into seven nodes in the Available Media tree: Original, Copy, Duplicate, Blank, Foreign, Unknown and Unformatted Media.

Original Media

All media that have been prepared for use by an extended drive but are not currently assigned to a media folder appear in the Original Media node. In order for a piece of media to appear in this list, the media must be all of the following:

- Formatted for the file system for which the hardware device is configured
- Labeled
- Not currently assigned to a media folder

Media appearing in this list is ready to be assigned to a media folder when necessary. In addition, Original media can be reformatted, deleted (if offline), or renamed, and its media properties viewed.

Copy Media

Copy media are media that are identical copies of other media in the DX system. The only difference between an original piece of media and its copy is the serial number for each piece of media. If an original piece of media becomes unreadable, the copy of the media can be promoted to an original piece of media once the damaged original is removed from the DX system.

Duplicate Media

Duplicate media is any media with the same serial number as another piece of media in the DX system. Duplicate media is unusable with DX and must be reformatted in order to have another serial number assigned to it.

Blank Media

Blank media is media that has been formatted for use with DISKXTENDER but not labeled. Blank media can be labeled, reformatted, deleted (if offline), or renamed, and its media properties viewed.

Foreign Media

Any media that has been formatted for a file system other than that of its current device, or media unsupported by DISKXTENDER is considered by DX to be "foreign" media and is placed in the Foreign node. Media in this list can be formatted (if the media is of a type that DX supports), and its media properties viewed.

Unknown Media

Media that is either an unsupported media type or media that has been formatted with a file system not recognized by DX will be placed in the Unknown media node. Unknown media is unusable with DX, and DX will not allow any commands to be performed on this media.

Unformatted Media

All unformatted media are listed under the Unformatted media node. Media in this list can be formatted, and its media properties viewed.

SEARCHING IN THE ADMINISTRATOR

As multiple components (extended drives, media folders, media) and multiple DX computers (for remote administration) are added to the system, the extended drives tree may become so large as to become difficult to locate a specific node of the tree. The Find command in the Tree menu can be used to quickly locate occurrences of text within the extended drives tree. This can be especially useful for finding a specific media folder or pieces of media.

The Administrator searches from the currently highlighted position in the tree to either the end or to the beginning of the tree, depending on the direction you choose. To search the entire tree, select an item either at the top or bottom of the tree before beginning the search and select the Up or Down direction as appropriate.

To search for specific text in the tree:

1 From the Tree menu, select Find. The Find dialog box appears.

Figure 5: Find Dialog Box

2 In the Find What text box, type the text to be found.

3 Click the Up or Down option button to search up or down in the tree from the currently highlighted position.

4 Click the Match Case checkbox to find only words having a certain pattern of uppercase and lowercase letters. For example, select this option to find "MEDIA" but not "media."

5 Click Find Next. The first occurrence of the text is highlighted in the tree. If the tree is not visible, move the Find dialog box by dragging its title bar.

6 To find the next occurrence, click Find Next again.

NOTE ✍

After you close Find dialog box, you can select Find Next from the Tree menu (or press F3) to find the next occurrence of the most recently specified text.

REMOTE ADMINISTRATION

DISKXTENDER (DX) allows you to administer the DX system both from the computer on which DX is installed and from remote computers. You can use the Administrator function that comes with a full installation of DISKXTENDER to administer other DX computers, or you can install the Remote Administrator, which simply provides you with the Administrator interface and the registration capability to attach remotely to any networked DX computer.

The remote administration function is the same whether you use a DX Administrator (full installation) or a Remote Administrator. Regardless of which Administrator function you have installed, you have to register the remote DX computer in order to allow the Administrator you are running to find and connect to the remote DX computer.

REGISTERING A DX COMPUTER

You can remotely administer one or more DX computer(s) both from the Administrator function installed with a full installation of DISKXTENDER and by

using the Remote Administrator. The Register command available through the Service menu of the Administrator allows you to access other DX computers by connecting through the network.

If access to a DISKXTENDER computer on the network is necessary, you must register the DX computer to add the DX computer's name to the Computer drop-down list and to the tree view of the Administrator. Only computers where DISKXTENDER is currently installed can be registered.

Registering DX computers can be done either using the Auto-Detect function, or by adding each DX computer manually. For procedures, see the *Registering a DX Computer using Auto Detect* section below or the *Registering a DX Computer manually* section on page 39.

NOTE

If you need to register a DISKXTENDER service that is installed on a clustered environment, be sure to select the logical cluster name for registration.

Registering a DX Computer using Auto Detect

For large systems with several DX computers, the normal registration process becomes unwieldy, since you must browse and select each computer on the network. The Auto-Detect feature lets you detect and select all currently running DX services on the network without browsing the system to find individual DX computers.

The Auto-Detect function works as a wizard that leads you through the registration process.

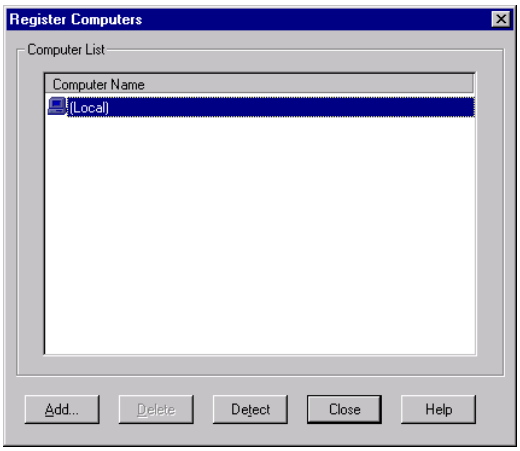
To start the Auto-Detect Wizard:

1 In the Administrator, select the Register option from the Service menu or click the icon on the toolbar.

Figure 6: Register Computer Icon

The Register Computers dialog box appears.

Figure 7: Register Computers Dialog Box

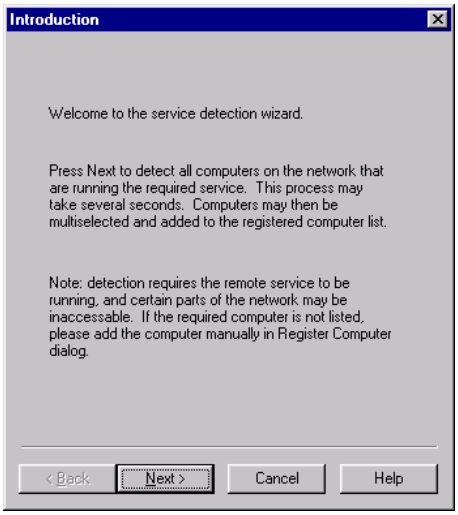


NOTE

All computers already registered with the currently open Administrator appear in the Register Computers dialog box, to include the local computer. If you are registering through a Remote Administrator, and you have not yet registered any DX computers, the Register Computers dialog box is blank.

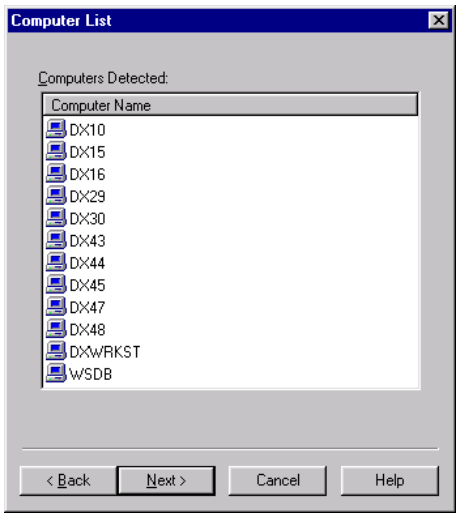
2 Click Detect to start the Auto-Detect wizard. The Introduction page appears.

Figure 8: Introduction Page



3 Read the Introduction and click Next. The Computer List page appears.

Figure 9: Computer List Page



The Computer List page lists all detected computers on which DX is installed and where the DX service is actively running (stopped services or powered-off computers will not be detected).

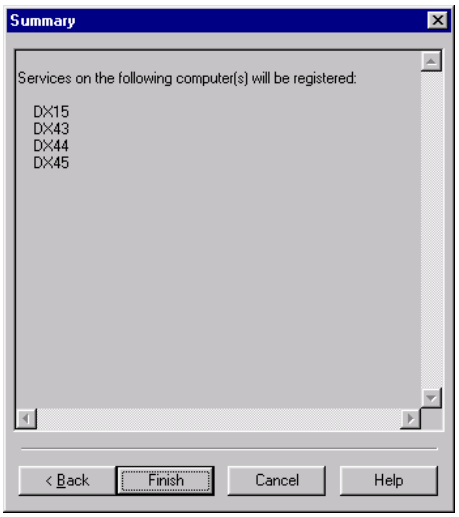
4 Select the computers you want to register and click Next. To select two or more computers in sequence, select the first computer, then press and hold the <SHIFT> key while selecting the last item. To select two or more computers out of sequence, press and hold the <CTRL> key while selecting computers.

NOTE

If a computer that you want to register does not appear in the Computers Detected list, you will have to register the computer manually. See *Registering a DX Computer manually* on page 39.

5 Click Next. The Summary page appears.

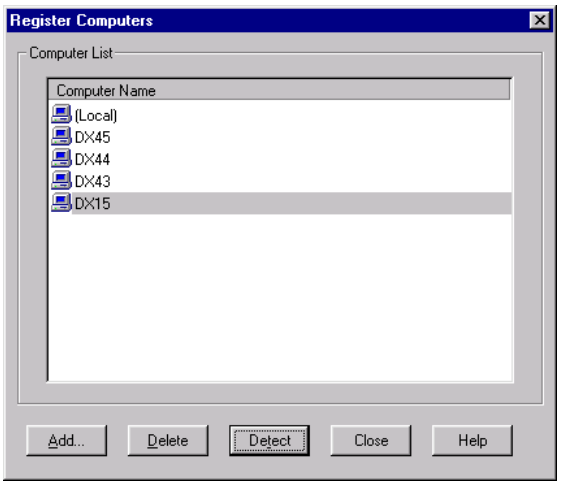
Figure 10: Summary Page



6 The Summary page lists the selected computers. Review the list to make sure the computers you want to register are listed. Click Back to return to the Computer List page, if necessary.

7 If the information in the summary is correct, click Finish. The selected computers are registered and now appear in the Computer List in the Register Computers dialog box.

Figure 11: Register Computers Dialog Box



8 If you inadvertently list a computer you do not want to register, or you wish to delete a previously registered computer, select that computer and click Delete. The computer is removed from the list.

9 Once the appropriate computers appear in the Register Computers dialog box, click Close. The Administrator attempts to connect to all registered DX computers. All registered computer name(s) now appear in the Computer drop-down list located directly beneath the main menu in the administrator, and in the tree view of the administrator window.

The Administrator can now be used to administer the DISKXTENDER service on the registered DX computer(s). You can switch between registered computers by selecting different computer names from the Computer drop-down list or by clicking on and highlighting the computers in the tree view of the Administrator.

Registering a DX Computer manually

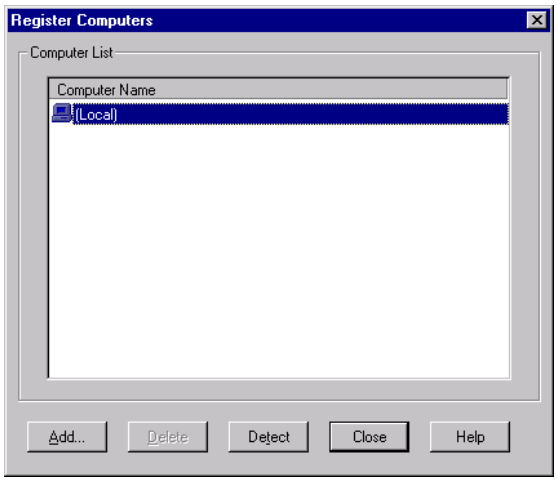
To manually register a DX computer:

1 In the Administrator, select the Register option from the Service menu or click the icon on the toolbar.

Figure 12: Register Computer Icon

The Register Computers dialog box appears.

Figure 13: Register Computers Dialog Box

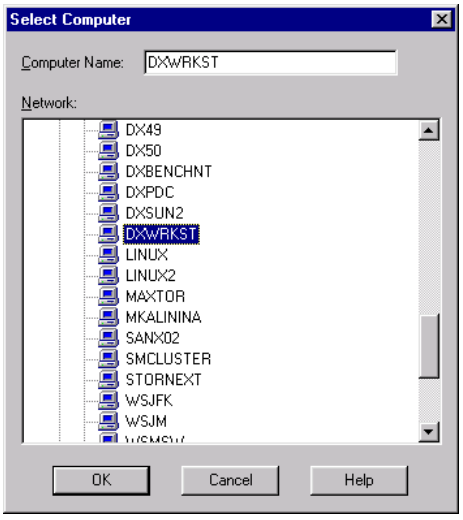


NOTE

All computers already registered with the currently open Administrator appear in the Register Computers dialog box, to include the local computer. If you are registering through a Remote Administrator, and you have not yet registered any DX computers, the Register Computers dialog box is blank.

2 Click Add to register a new DX computer. The Select Computer dialog box appears.

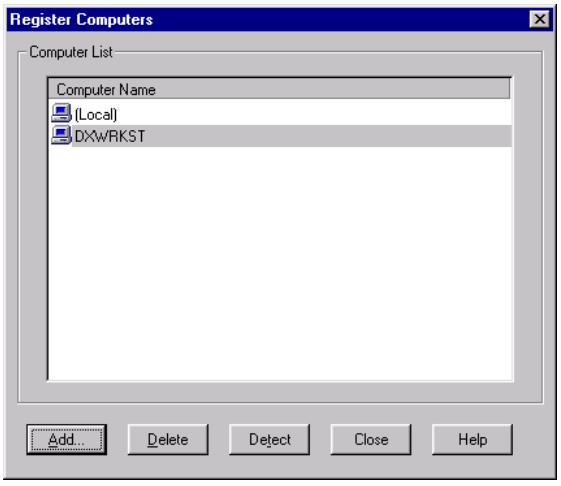
Figure 14: Select Computer Dialog Box



The Select Computer dialog box allows you to select any visible network computer. To successfully register, the selected computer must have DISKXTENDER installed.

3 Select the computer you want and click OK (or double-click the computer). You are returned to the Register Computer dialog box and the computer you selected appears in the computer list.

Figure 15: Register Computers Dialog Box



4 Repeat this process for every computer you wish to manually register as a DISKXTENDER computer for remote administration.

5 If you inadvertently list a computer you do not want to register, or you wish to delete a previously registered computer, select that computer and click Delete. The computer is removed from the list.

6 Once the appropriate computers appear in the Register Computers dialog box, click Close. The Administrator attempts to connect to all registered DX computers. All registered computer name(s) now appear in the Computer drop-down list located directly beneath the main menu in the administrator, and in the tree view of the administrator window.

The Administrator can now be used to administer the DISKXTENDER service on the registered DX computer(s). You can switch between registered computers by selecting different computer names from the Computer drop-down list or by clicking on and highlighting the computers in the tree view of the Administrator.

CONNECTING TO DX COMPUTERS

When the Administrator is opened, it attempts to connect to all registered DX computers (to include the local computer for full installations of DX). Once these connections have been made, the window displays information pertaining to each DX service. The Administrator allows you to switch easily between registered DX computers by clicking on and highlighting the computers in the tree view, or by selecting different computers from the Computer drop-down list.

Figure 16: Computer Drop-Down List

Remember, in order to successfully connect to a DX computer, you must have administrator rights on the selected DX computer.

DISCONNECTING THE ACTIVE SERVER

You may wish to disconnect from the currently active DX computer. Disconnecting from the active service removes that computer's DX components from the tree view, though the computer will still appear, listed with a status of `(Disconnected)`.

To disconnect from the active DX computer:

➲ Highlight the computer from which you want to disconnect, and click the Disconnect toolbar button or select Disconnect from the Service menu.

Figure 17: Disconnect Computer Toolbar Button

RECONNECTING THE ACTIVE SERVER

Once disconnected from a DX computer, the computer name will still appear in the tree view, but with the status of `(Disconnected)`. You can reconnect to any of the registered DX computers at any time.

To reconnect to a DX computer:

➲ Highlight the computer to which you want to connect, and click the Connect toolbar button or select Connect from the Service menu.

Figure 18: Connect Computer Toolbar Button

CHAPTER THREE

EXTENDED DRIVE ADMINISTRATION

Administering your extended drive involves management of the files saved on the extended drive, and of the extended drive itself. Much of the administration of the extended drive can be done through configuration of the extended drive properties and proper setup of certain schedulable events.

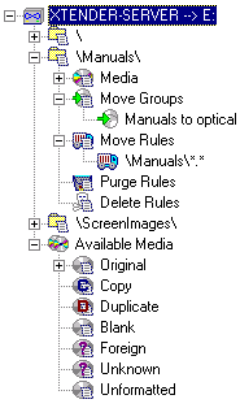
As the DX administrator, you will want to become very familiar with the properties and options for the extended drives. Understanding how these functions work, and more importantly, how they work together, will allow you to configure DX in a way that will make management of the system simple, and make DX more efficient.

Since the extended drive is one of the most critical components of the DX system, this guide has devoted this entire chapter to explaining the extended drive functions and options available to you. In this chapter, you will find detailed information on extended drive schedules for drive scans, media activity schedules and extended drive backups. You will also find discussions about the available options for each extended drive, and procedures for how to access these extended drive properties.

THE EXTENDED DRIVES TREE

The Tree View in the Administrator displays all current extended drives for the registered DX computer(s), the available media pool for each extended drive, and all media folders configured for each extended drive. In addition, associated media, move groups, move rules, purge rules, and delete rules appear below each media folder for which they have been configured.

Figure 19: Extended Drives Tree



EXTENDED DRIVE COMMANDS

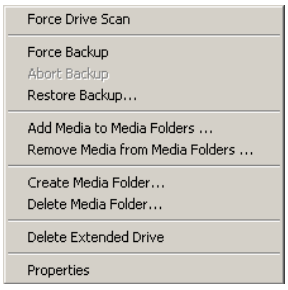
The commands available to assist you with administering your extended drive are available in two places from the interface: the Edit menu and the shortcut menu. The commands available through both are identical when the extended drive is selected in the tree view (see Figure 19 above).

To access the extended drive commands:

➲ You have two choices:

- Select the extended drive in the tree view and click Edit from the main menu.
- Right-click on the extended drive in the tree view.

Figure 20: Extended Drive Commands



The commands available for your extended drive appear. Briefly defined, these commands are:

Table 10: Extended Drive Edit/Shortcut Menu Commands

COMMAND:	FUNCTION:	FOR MORE INFORMATION, SEE:
Force Drive Scan	Forces an immediate scan of the extended drive. Drive scans write files to move and purge lists, and remove files from media folders when the corresponding media is removed from the folder.	*Forcing Drive Scans* on page 46.
Add Media to Media Folders	Starts the wizard that allows you to add one or more pieces of Original (unassigned) media to a media folder.	Setting Up File Migration chapter of the DX2000 Data Management Guide.
Remove Media from Media Folders	Starts the wizard that allows you to remove one or more pieces of media (and their corresponding files) from a media folder.	*Removing Media from Media Folders* on page 221.
Force Backup	Forces an extended drive backup whenever needed.	*Forcing an Extended Drive Backup* on page 172.
Abort Backup	Stops an extended drive backup after one has started.	*Stopping an Extended Drive Backup in Progress* on page 173.
Restore Backup	Allows you to restore backed up files.	*Restoring Extended Drive from Backup* on page 184.
Create Media Folder	Starts the wizard that creates a media folder (or turns an existing folder into a DX media folder) on the currently selected extended drive.	Setting Up File Migration chapter of the DX2000 Data Management Guide.
Delete Media Folder	Starts the wizard that allows you to delete one or more media folders from the currently selected extended drive.	*Deleting Media Folders* on page 224.
Delete Extended Drive	Deletes the currently selected extended drive and all of that drive's associated components.	*Deleting Extended Drives* on page 225.
Properties	Opens the extended drive Properties box, through which you can set up schedules and configure extended drive options.	*Extended Drive Properties* on page 47.

This chapter deals specifically with administration and maintenance of the extended drive using drive scans, both forced and scheduled, setting up of other schedulable

extended drive events, and viewing and configuring the extended drive properties and options.

FORCING DRIVE SCANS

Drive scans must be performed periodically in order to write files to the move and purge lists, and consequently to move the files to storage media and to purge the data from the extended drive. During a drive scan, DX inventories all of the files on an extended drive and checks each file against the migration rules for the drive, adding eligible files to the move and purge lists.

WARNING

File-sharing issues or sharing violations can prevent files from being added to the move list when appropriate. DX *must* have full access to a file in order to obtain information required for the move list. If the file is open or is otherwise being accessed by a program or user, DX cannot add it to the move list.

Drive scans are also necessary when removing a piece of media from a media folder, in order to completely remove that media's files from the folder on the extended drive. Normally DX will prompt you to run a drive scan at that time, but if necessary you can wait until a later time to force the drive scan needed to remove those files, or wait until the next scheduled drive scan.

Drive scans can be forced or scheduled. Until you set up a drive scan schedule for the extended drives, automatic (scheduled) drive scans are disabled. However, you can force an extended drive scan whenever needed.

If you are planning any DX system maintenance, forcing an extended drive scan, in conjunction with activating your Move files to media schedule, is an excellent way to be sure all appropriate files are written to media before the maintenance is done.

To force a drive scan on the extended drive:

- You have two options:
  - Select the extended drive in the tree view and select Force Drive Scan from the Edit menu.
  - Right-click on the extended drive and select Force Drive Scan from the shortcut menu.

A drive scan is run on the extended drive and the appropriate files are marked for move or purge or are deleted as necessary.

For details on scheduled drive scans, see *Extended Drive Settings - Drive Scan Option* on page 53.

EXTENDED DRIVE PROPERTIES

Much of your extended drive administration can be taken care of automatically with proper setup and configuration of the available extended drive properties. The options available within the Extended Drive Properties dialog box allow you to do everything from setting up media activity schedules and drive scan schedules, to having the system inform you when extended drive space gets low and setting up a percentage full watermark for when to purge files.

When you open the Extended Drive Properties dialog box, you will see four tabs: General, Settings, Options and Statistics.

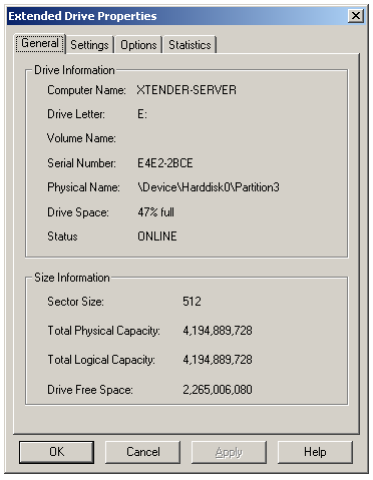
To open the extended drive properties dialog box:

➲ You have two choices:

- Select the extended drive and select Properties from the Edit menu.
- Right-click on the extended drive and select Properties from the shortcut menu.

The Extended Drive Properties dialog box appears.

Figure 21: Extended Drive Properties Dialog Box



The information and configuration possibilities available on each of these tabs are discussed in detail in the sections that follow.

- For information on the General tab, see *The General Tab* on page 48.
- For information on the Settings tab, see *The Settings Tab* on page 50.
- For information on the Options tab, see *The Options Tab* on page 61.
- For information on the Statistics tab, see *The Statistics Tab* on page 72.

THE GENERAL TAB

When opening the Extended Drive Properties dialog box, the General tab appears by default. The General tab displays identifying information for the drive, as well as extended drive total space and free space information.

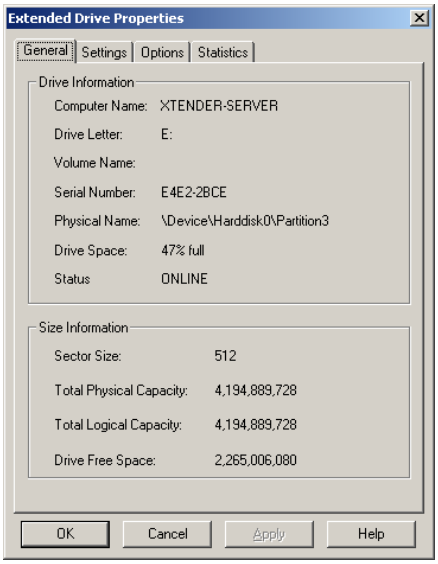
NOTE

The information shown in the General tab is a summary of the information shown in the description view of the administrator when the extended drive is selected.

To view the general tab of the extended drive properties:

➲ With the Extended Drive Properties dialog box open, click the General tab.

Figure 22: Extended Drive Properties: General Tab



The information on the tab is separated into two sections: Drive Information and Size Information. The following table describes each of the items appearing on the General tab:

Table 11: Extended Drive Properties: General Tab Items

GROUP:	ITEM:	DESCRIPTION:
Drive Information:	**Computer Name:**	The name of the DX computer where the extended drive is located.
	Drive Letter:	The drive letter of the extended NTFS volume (extended drive).
	Volume Name:	The volume name of the extended NTFS volume (extended drive).

GROUP:	ITEM:	DESCRIPTION:
	Serial Number:	The serial number of the physical hard drive on which the extended NTFS volume is located.
	Physical Name:	The physical name of the hard drive on which the extended NTFS volume is located.
	Drive Space:	The percentage of drive space used on the physical hard drive on which the extended NTFS volume is located.
	Status:	The status (online or offline) of the extended drive.
Size Information:	**Sector Size:**	The size of each sector on the extended drive.
	Total Physical Capacity:	The total physical space available on the extended drive.
	Total Logical Capacity:	The total usable space available on the extended drive.
	Drive Free Space:	The total free space available on the extended drive.

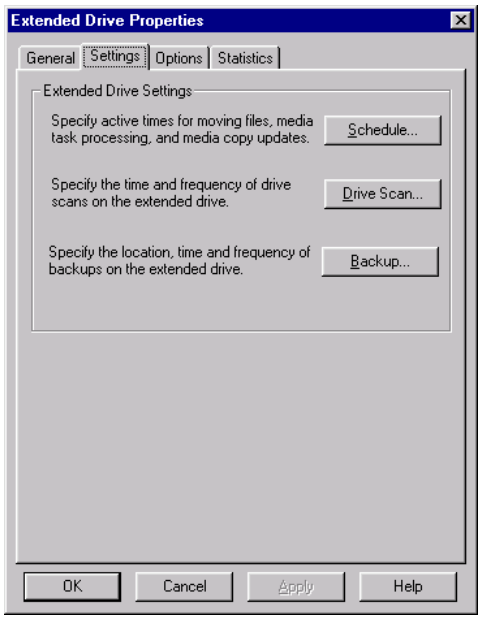
THE SETTINGS TAB

The Settings tab provides access to the scheduling functions for drive scans and media activities.

To view the settings tab of the extended drive properties:

➲ With the Extended Drive Properties dialog box open, click the Settings tab.

Figure 23: Extended Drive Properties: Settings Tab



The Settings tab provides access to three extended drive settings: the media activity schedule, the drive scan schedule and the extended drive backup schedule. Clicking the appropriate button on the Settings tab opens the applicable scheduling function.

After configuring the Schedule, Drive Scan and Backup settings, you have three options:

- Click OK to save your changes and close the Extended Drive Properties dialog box.
- Click Apply to save your changes without closing the Extended Drive Properties dialog box.
- Click Cancel to discard all changes and close the Extended Drive Properties dialog box.

Extended Drive Settings - Schedule option

A media activity is defined as any activity for which media must be mounted in a drive. When a client accesses a file, a fetch or file retrieval request is sent, which is a media activity that takes place immediately upon request. Scheduling other less urgent media activities during inactive times ensures that those activities do not compete with network clients or media devices for system drive or library resources.

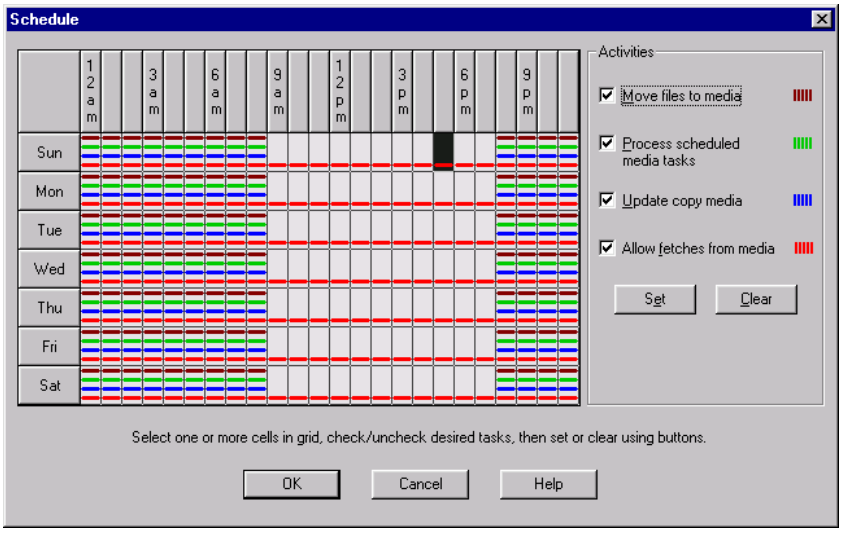
There are four storage media activities that can be scheduled for each extended drive. Those activities are:

- Move files to media
- Process scheduled media tasks
- Update copy media
- Allow fetches from media

The extended drive scheduler allows any or all of these four media activities to be scheduled for a time range (e.g., 2am-4am). This range provides a "window of opportunity" for the activity(s) to occur. Any time within this range that an activity can begin, it will. If for any reason the activity does not begin during this time, it will not be performed until the next time the schedule is active.

The activity scheduler exists as a property of each extended drive, and is accessed through the Settings tab of the Extended Drive Properties dialog box. These schedules are specific to and must be configured separately for each extended drive.

Figure 24: Extended Drive Schedule Dialog Box



Within the scheduler, colored lines represent each activity, allowing you to quickly see which activities are schedule for when. When the scheduler first appears, three of the four available activities are scheduled to occur from 8 p.m. to 9 a.m. every day of

the week. The Allow fetches from media activity is scheduled to occur 24 hours a day, 7 days a week (always active). These are the defaults for each DX extended drive, and these schedules will remain set this way until changed.

The schedule grid contains columns for each hour of the day and rows for each day of the week, creating cells which each represent one hour. For example, the blacked out cell in Figure 24 above represents 5 p.m. to 6 p.m. on Sunday. DISKXTENDER'S scheduler allows you to set scheduled activities by selecting one or many cells in the grid and by selecting one or more activities for those time period cells. You can easily schedule all activities for a large block of time, or you can schedule specific activities for smaller blocks of time.

When you select an area in the schedule grid and click the Set button, any activities checked will be scheduled for that time period. Any activities not checked will be cleared for the selected area, even if they were already scheduled for some or all of the time blocks.

NOTE ✍

Any time that the Allow fetches from media schedule is *not* active, client requests for purged files *will not* be honored (to include direct reads). By changing the schedule for this activity, you may accidentally prevent clients from having access to purged files. We recommend that you leave the default setting for fetches (always active) in place, unless your organization requires a time-based restriction of access to purged files. If there is a time-based restriction, enabling deferred fetch requests will allow clients access to files when the Allow fetches from media schedule becomes active again. See *Defer fetch request if fetch is disabled:* on page 70 for more information.

To set up a media activity schedule:

1 From the Settings tab in the Extended Drive Properties dialog box, click Schedule. The Schedule dialog box appears.

2 To change schedule settings, select the area of the grid that corresponds to the time period during which you would like to schedule or clear an activity.

- To set an activity for the selected blocks, check the appropriate option(s) in the Activities section of the Schedule dialog box.
- To clear an activity for all selected blocks, uncheck the appropriate option(s) in the Activities section of the Schedule dialog box.

Use the buttons described in the following table to make and save changes as needed.

Table 12: Schedule Properties Dialog Box: Set/Clear Buttons

BUTTON:	ACTION:
Set	Sets the activities that are checked and clears the activities that are not checked in the highlighted area of the schedule grid.
Clear	Clears all scheduled activities in the highlighted area of the schedule grid, regardless of which options are checked in the Activities section.

3 After making changes, *review the activity schedule carefully* to make sure that in setting a schedule for one activity you have not accidentally cleared scheduled times for another activity.

4 When your changes to the activity schedule are complete, you have the following choices:

- To save changes and close the Schedule dialog box, click OK.
- To discard all changes made since the Schedule dialog box was opened and close the Schedule dialog box, click Cancel.

NOTE

You must save changes to the schedule using the Set and Clear buttons before selecting OK or Apply. Making changes and selecting OK without using the Set or Clear buttons will close the dialog box without saving your changes.

Extended Drive Settings - Drive Scan Option

The primary purpose of drive scans is to write files that qualify for move and purge rules with an age-delay to the move and purge lists. Files will not be moved or purged unless they are listed on the move list or purge list respectively. During a drive scan, DX inventories all of the files on an extended drive and checks each file against the migration rules for the drive, adding eligible files to the move and purge lists as appropriate.

If you configure any move rules or purge rules to have age-delays, you *must* perform regular extended drive scans to update the move and purge lists. If any of your move and purge rules use a file age exception to delay move and/or purge of files, you should set a regular drive scan schedule to make sure that all appropriate files are written to the move and purge lists. Files that qualify against move rules with no age delay are typically written to the move list as soon as they are saved to the extended drive.

WARNING

File-sharing issues or sharing violations can prevent files from being immediately added to the move list when appropriate. DX must have full access to a file in order to obtain the information required for the move list. If the file is open or is otherwise being accessed by a program or user, DX cannot add it to the move list.

Because files may not be added to the move list due to file-sharing issues, regular drive scans are required to be sure that all appropriate files are written to the move list when they qualify, and as such, are being written out to storage media (in coordination with your Move files to media schedule). DX allows you to set a regular schedule for drive scans. Because drive scans for very large extended drives can be time consuming, and to make sure files due to be added to the move list are not currently being accessed, you may want to schedule your drive scans to occur during times of low extended drive and system traffic.

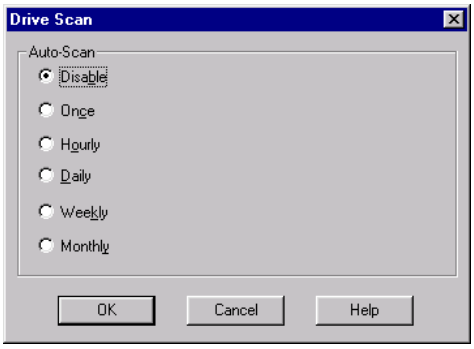
Drive scans can also be forced whenever needed. For details on forcing drive scans, see *Forcing Drive Scans* on page 46.

Drive scan scheduling is managed at the extended drive level, using the Drive Scan button on the Settings tab in the properties for each extended drive. Until you set up a drive scan schedule for the extended drives, automatic drive scans are disabled.

To access the drive scan scheduler:

➲ From the Settings tab in the Extended Drive Properties dialog box, click Drive Scan. The Drive Scan dialog box appears.

Figure 25: Drive Scan Dialog Box



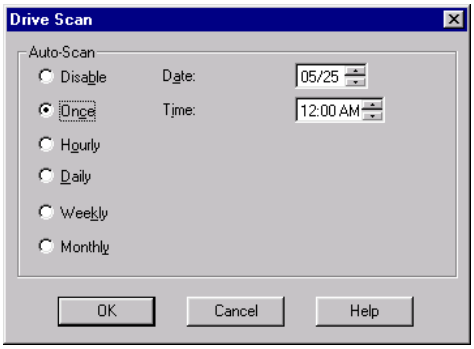
The Drive Scan dialog box allows you to schedule drive scans as frequently as is appropriate for your system needs. Drive scans can be scheduled to occur once, hourly, daily, weekly, or monthly. You can also disable automatic drive scans.

When each different Drive Scan scheduling option is selected, the appropriate configuration boxes appear on the right side of the Drive Scan dialog box. Details on configuring each scheduling option appear below.

To perform a one-time drive scan:

1 Click Once on the Drive Scan dialog box. The Date and Time spin-boxes appear.

Figure 26:One-time Drive Scan Options



2 In the Date spin-box, specify the date you want the drive scan to occur.

3 In the Time spin-box, specify the time you want the drive scan to occur.

4 Click OK.

NOTE

The default values for the Date and Time spin boxes are today's date and 12:00AM respectively. Because it is likely this default time occurs in the past, the drive scan will not run unless you change the defaults to a date and/or time in the future.

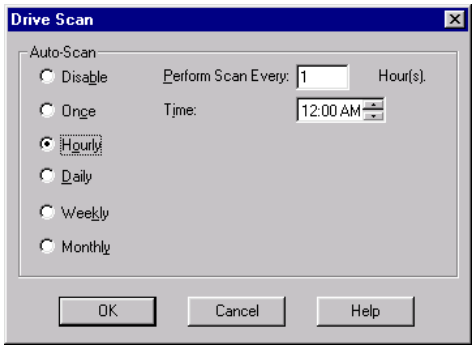
NOTE

After a one-time Drive Scan is processed, the Drive Scan schedule is disabled, meaning drive scans will not occur again unless forced or scheduled.

To configure the drive scan to occur on an hourly basis:

1 Click Hourly on the Drive Scan dialog box. The Perform Scan Every ____ Hour(s) text box and Time spin-box appear.

Figure 27: Hourly Drive Scan Options



2 In the Perform Scan Every ____ Hour(s) text box, specify the hourly rate at which you want the drive scans to occur. You can enter a number from 1 to 24.

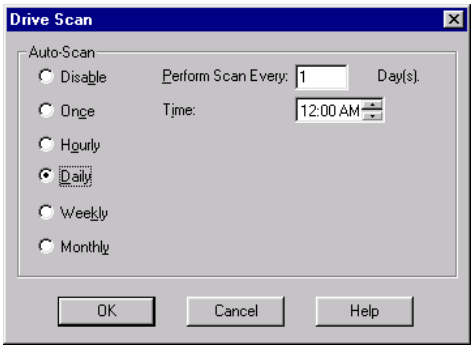
3 In the Time spin-box, specify the time you want the first drive scan to occur.

4 Click OK.

To configure the drive scan to occur on a daily basis:

1 Click Daily on the Drive Scan dialog box. The Perform Scan Every ____ Day(s) text box and Time spin-box appears.

Figure 28: Daily Drive Scan Options



2 In the Perform Scan Every ____ Day(s) text box, specify the daily rate for the drive scans. You can enter a number anywhere from 1 to 365.

3 In the Time spin-box, specify the time when you want the drive scans to occur.

NOTE

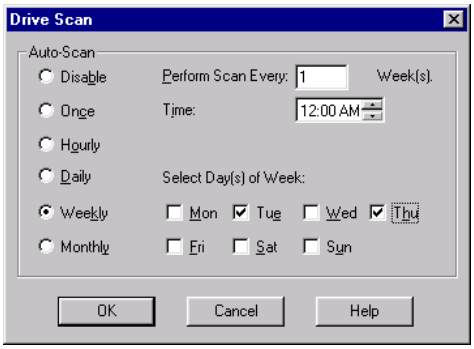
File-sharing violations will prohibit DX from being able to write eligible files to the move list. For this reason, choose a time for your daily drive scans when it is least likely that clients will be accessing files from the extended drive.

4 Click OK.

To configure the drive scan to occur on a weekly basis:

1 Click Weekly on the Drive Scan dialog box. The Perform Scan Every ____ Week(s) text box, the Time spin-box, and checkboxes for the days of the week appear.

Figure 29: Weekly Drive Scan Options



2 In the Perform Scan Every ____ Week(s) text box, specify the weekly rate for the drive scans. You can enter a number anywhere from 1 to 52.

3 In the Time spin-box, specify the time you want the drive scans to occur.

NOTE

File-sharing violations will prohibit DX from being able to write eligible files to the move list. For this reason, choose a time for your weekly drive scans when it is least likely that clients will be accessing files from the extended drive.

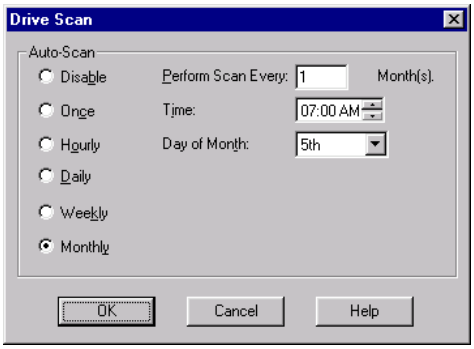
4 Under Select Day(s) of Week, specify which day(s) of the week you want the drive scans to occur.

5 Click OK.

To configure the drive scan to occur on a monthly basis:

1 Click Monthly on the Drive Scan dialog box. The Perform Scan Every ____ Month(s) text box, the Time spin box, and the Day of Month drop-down list box appear.

Figure 30: Monthly Drive Scan Options



2 In the Perform Scan Every ____ Month(s) text box, specify the monthly rate for the drive scans. You can enter a number from 1 to 12.

3 In the Time spin-box, specify the time you want the drive scans to occur.

NOTE

File-sharing violations will prohibit DX from being able to write eligible files to the move list. For this reason, choose a time for your monthly drive scans when it is least likely that clients will be accessing files from the extended drive.

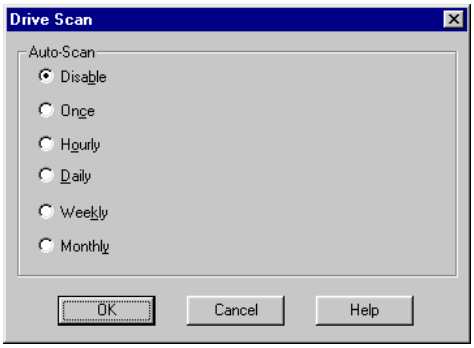
4 In the Day of Month drop-down list box, specify the date for the drive scans to occur.

5 Click OK.

To disable automatic drive scans for this drive:

1 Click Disable on the Drive Scan dialog box.

Figure 31: Disable Drive Scan Option



2 Click OK.

Extended drive scans are disabled by default.

WARNING

Disabling drive scans can result in files not being migrated to media when appropriate. Drive scans ensure proper synchronization of DX files by writing files that qualify for age-delayed move rules to the move list, along with files that may have had a sharing violation when DX initially attempted to access the file. For this reason, you should not disable drive scans unless absolutely necessary, and if you do, to do so for only limited periods of time.

Extended Drive Settings - Backup option

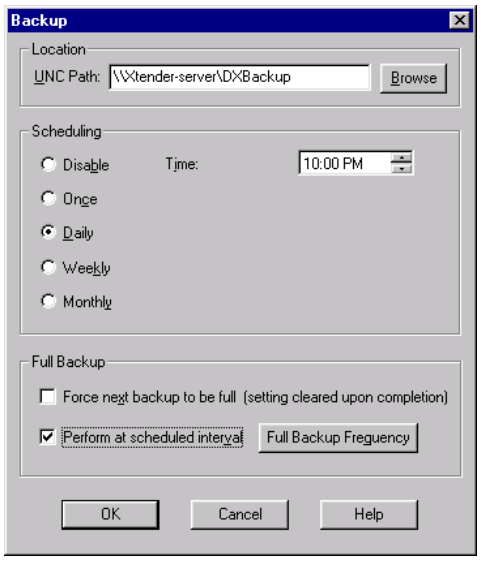
Extended drive backups should be performed periodically in order to back up DISKXTENDER managed files and file tags. While you may be using a system backup program, these programs can often be limited when it comes to backing up all of the data necessary to restore your DISKXTENDER files in the event of a system problem or disaster. Standard backup programs most often either do not back up the attributes pointing to file locations on media, or they cause every purged file on the drive to be retrieved, making backups far too time-consuming and sometimes incomplete due to time-constraints.

However, DX contains an Extended Drive Backup utility that is specifically engineered to allow you to reliably back up all of the data on your extended drives while you are using DX. During an extended drive backup, DX inventories *all* of the files on an extended drive and sees that the appropriate information (file data for non DX-managed files, file metadata for DX-managed files, to include file tags) is saved. DX then creates a data set file containing all of the information obtained from the inventory. The Extended Drive Backup utility allows you to set a network path for the backup data set file, set your backup schedule, and choose to run both incremental and/or full backups. You can then back up that file to another location using a standard backup program.

A full DX backup creates a backup file containing needed information for all files on the extended drive. Incremental backups are generally used in between scheduled full backups to capture files not previously backed up by DX. Incremental backups update the information in the file created by the full backup. Incremental backups take significantly less time than full backups, and for this reason can be scheduled more frequently.

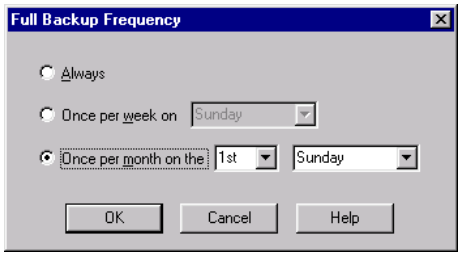
Extended drive backup scheduling is managed at the extended drive level, using the Backup button on the Settings tab in the properties for each extended drive. Until you set up a backup schedule for the extended drives, automatic backups are disabled.

Figure 32: Extended Drive Backup Dialog Box



The Backup dialog box contains three sections. The top section allows you to type in or browse to the folder in which you want your backup files saved. The second section is a Scheduling section that allows you to select a regular schedule for incremental backups. The third section is a Full Backup section that allows you to set regular schedules for complete DX backups.

Figure 33: Full Backup Frequency Dialog Box



The Full Backup Frequency dialog box is accessed through the Full Backup Frequency button on the extended drive Backup page. This button is active when the Perform at scheduled interval option is checked. Full backups can be scheduled to occur every time the incremental schedule is activated (Always), Once per week on a specified day, or Once per month on a specified day. Full backups can often be time-consuming because a full backup will include all files on the extended drive, regardless of whether or not they are managed by DISKXTENDER.

Because configuration and scheduling of the Extended Drive Backup utility should be a part of a complete backup and recovery plan, we have placed more details and specific instructions for this function in the *Extended Drive Backup Utility* section beginning on page 163 of the Backup and Recovery chapter.

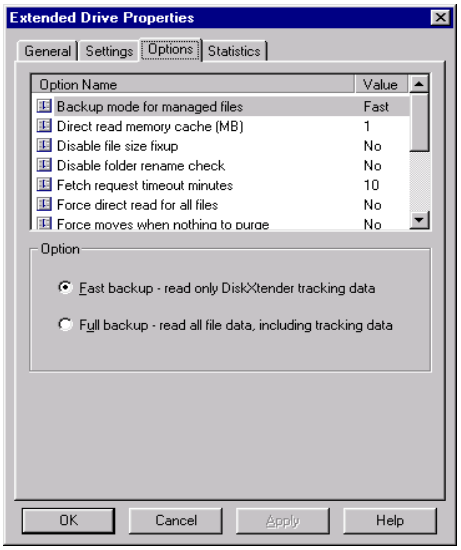
THE OPTIONS TAB

The Options tab allows you to view and configure several options affecting extended drive functionality. We recommend you pay special attention to the functions available through the Extended Drive Properties Options tab and configure them appropriately. These options are designed to make administering your extended drive easier and to help prevent file read/write and space issues.

To view and configure extended drive options:

1 With the Extended Drive Properties dialog box open, click the Options tab.

Figure 34: Extended Drive Properties Dialog Box: Options Tab



The upper section of the Options tab shows a list of extended drive options available for configuration. The option information in the bottom section of the Options tab changes to reflect the configuration aspects available for the option selected in the list in the top section of the Options tab.

Each of these options is discussed in detail below and in the order in which they appear in this list. Again, we recommend you configure each of these options as appropriate to your system needs in order to ensure optimal system performance and data security.

2 After configuring your extended drive options, you have three choices:

- Click OK to save your changes and close the Extended Drive Properties dialog box.
- Click Apply to save your changes without closing the Extended Drive Properties dialog box.
- Click Cancel to discard all changes and close the Extended Drive Properties dialog box.

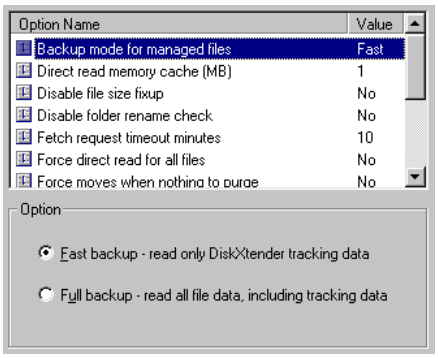
Extended Drive Options

Each of the configurable extended drive options is discussed below. The configuration options that appear in the lower part of the Options tab correspond to the option selected in the list in the upper part of the Options tab.

Backup mode for managed files:

Use this option to configure how DISKXTENDER managed files are saved during a backup using a third-party backup system. Files become "managed" by DISKXTENDER once they are moved to media. Since the file data is managed by DX on storage media, you can select to have the backup system only back up the file tag for those files.

Figure 35: Backup Mode For Managed Files Option



Fast backup – read only DISKXTENDER tracking data: select this option to backup only the file tags of DISKXTENDER managed files. This is the default.

Full backup – read all file data, including tracking data: select this option to backup all file tags *and* the file data of DISKXTENDER managed files.

NOTE

This backup setting pertains only to third-party system backups external to DISKXTENDER and is not related in any way to the Extended Drive Backup Utility. We still recommend that you use the Backup Utility to back up your DX files.

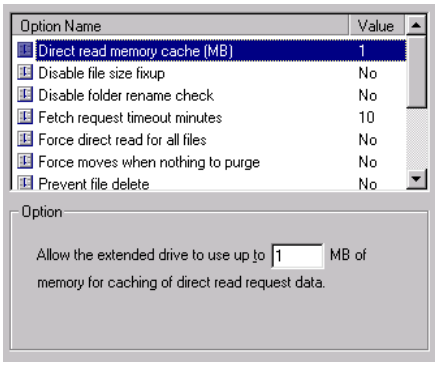
WARNING

If you are using any backup program that does NOT backup extended file attributes, this setting should be left at Full. Setting this option for Fast backup may result in file data not being backed up properly.

Direct read memory cache (MB):

Use this option to configure the amount of memory space, in megabytes, to be allocated for direct reads from media. Direct read means that when files are requested, they are read directly from the media rather than being fetched to the extended drive first. The file data for direct read files must be fetched to a temporary cache on the extended drive for distribution to the requesting client. This setting determines how much extended drive space to allow for that temporary cache.

Figure 36: Direct Read Memory Cache (MB) Option

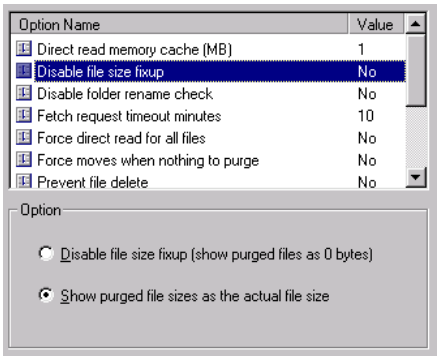


In the text box enter the maximum number of megabytes to use for caching direct read files upon client request. Cache size can be determined by considering the number of files that may be retrieved at any time and the typical sizes of those files. The default is 1MB.

Disable file size fixup:

Use this option to change the way purged DX files appear in Windows Explorer. What file fixup does is display the actual file size of all DX files. Disabling file size fixup will change the display of purged DX files to show a file size of 0 bytes (because the file data has been moved to media and purged from the extended drive). All other file attributes remain the same.

Figure 37: Disable File Size Fixup Option



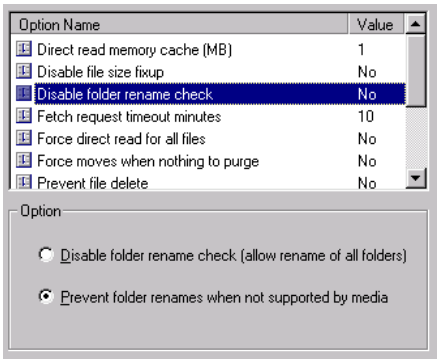
Disable file size fixup (show purged files as 0 bytes): select this option to show all files that have been moved to media and purged as 0 byte files.

Show purged file sizes as the actual file size: select this option to show all files that have been moved to media and purged with the actual file size as it would be if the file data were present on the extended drive. This is the default.

Disable folder rename check:

Use this option to manage whether or not users can rename folders on the extended drive. The folder rename check allows only folders containing Window Native file system media to be renamed. OTG File System formatted media do not support folder renaming. Disabling the folder rename check allows users to rename DX folders on the extended drive, regardless of whether the rename is supported by media or not.

Figure 38: Disable Folder Rename Check Option



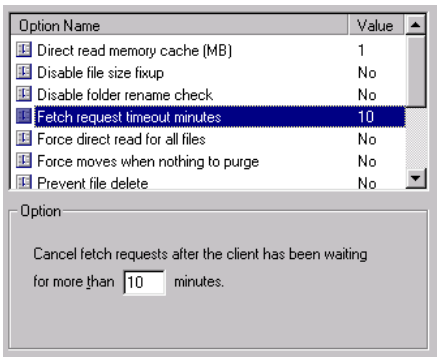
Disable rename folder check (allow rename of all folders): select this option to allow users to rename folders.

Prevent folder renames when not supported by media: select this option to only allow the renaming of folders that contain Windows Native formatted media, which supports folder renaming. This is the default.

Fetch request timeout minutes:

Use this option to configure the number of minutes DX will wait after a fetch request has been made before canceling the request. This option allows you to reduce network traffic by stopping requests in cases where the user no longer expects the file to open because of the amount of elapsed time since the request.

Figure 39: Fetch Request Timeout Minutes Option

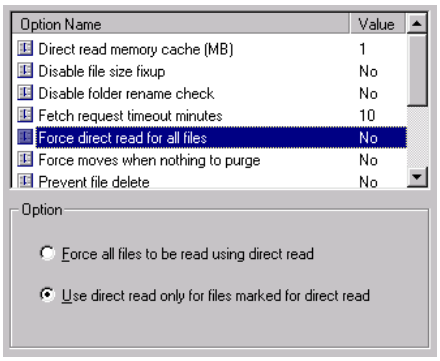


Enter the number of minutes before timeout in the text box. You should set this number to be high enough not to cancel requests for which clients could conceivably still be waiting. The default is 10 minutes.

Force direct read for all files:

Use this option to add the direct read attribute to *all* files purged from this extended drive. Direct read means that when files are requested, they are read directly from the media rather than being fetched to the extended drive first.

Figure 40: Force Direct Read For All Files Option



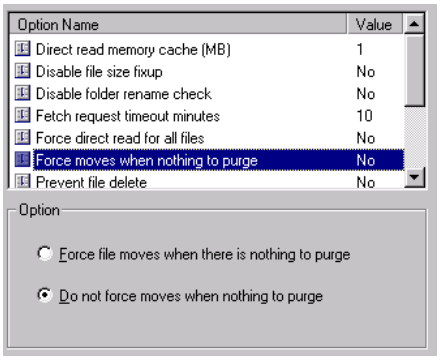
Force all files to be read using direct read: select this option to apply the direct read attribute to all files purged from this extended drive, regardless of whether individual direct read setting on these files is enabled or disabled.

Use direct read only for files marked for direct read: select this option to only apply the direct read attribute to files that have been otherwise configured for direct read (either through move or purge rules or Explorer Add-ons). This is the default.

Force moves when nothing to purge:

The Force moves when nothing to purge function only activates when the purge watermark for the extended drive has been reached and there are no files written to the purge list (eligible to be purged). Since files on the extended drive cannot be purged until they are moved to media, enabling this option forces processing of the move list, so that files can be written to the purge list (if appropriate) and purged from the extended drive. Essentially, this option activates the Move files to media activity for the extended drive.

Figure 41: Force Moves When Nothing To Purge Option



Force file moves when there is nothing to purge: select this option to force processing of the move list when the purge list is empty and space still needs to be cleared on the extended drive to reach the purge stop watermark.

Do not force moves when there is nothing to purge: select this option to cause DX to stop purging once the purge list is empty, even if space still needs to be cleared on the extended drive to reach the purge stop watermark. Purging will resume the next time a file is added to the purge list. This is the default.

NOTE

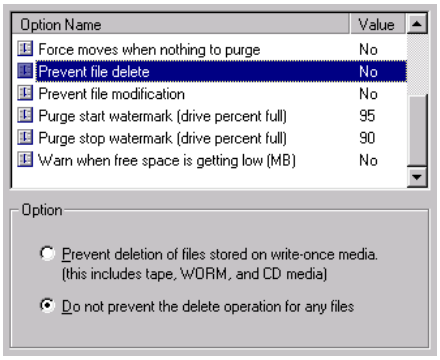
If you are concerned about running out of space and you have configured move rules with age delays, make sure your drive scan schedule is set to run regular drive scans in order to add files to the move and purge lists.

Prevent file delete:

Use this option to limit delete rights for files in media folders that contain write-once only media. This type of media includes WORM and CD media and any media

formatted with FAT file system. This option will not affect files in media folders associated with re-writable media.

Figure 42: Prevent File Delete Option



Prevent deletion of files stored on write-once and read-only media (this includes tape, WORM, and CD media): select this option to prevent clients from deleting files from DX media folders that contain only write-once media.

Do not prevent the delete operation for any files: select this option to allow clients to delete any files. This is the default.

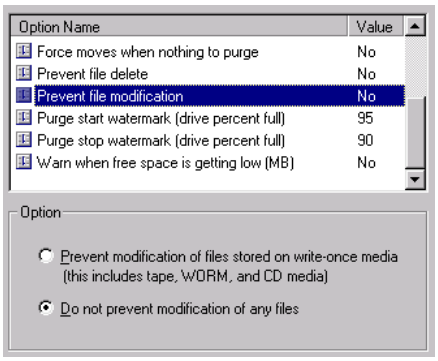
NOTE

If file deletion is not prevented, deletion of files stored on write-once and read-only media will delete the files (and/or file tags) from the extended drive, making DX no longer able to track the files on the media.

Prevent file modification:

Use this option to restrict user rights to modify files in media folders that contain only write-once media. This includes WORM and CD media and any media formatted with the FAT file system. This option will not affect files in media folders associated with re-writable media.

Figure 43: Prevent File Modification Option



Prevent modification of files stored on write-once and read-only media (this includes tape, WORM, and CD media): select this option to prevent clients from modifying files in media folders that contain only write-once media.

Do not prevent modification of any files: select this option to allow clients to modify any files in DX media folders that contain only write-once media. This is the default.

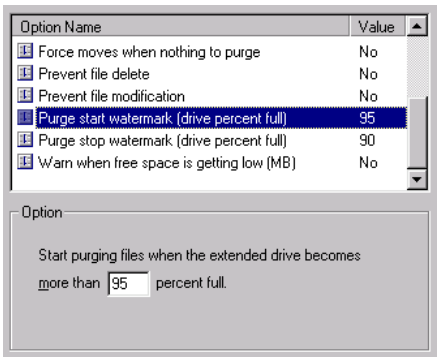
NOTE

If file modification is not prevented, modification of files stored on read-only media only modifies the files on the extended drive.

Purge start watermark (drive percent full):

Use this option to configure the percentage of used drive space that must be exceeded to cause DX to start processing the purge list. Processing of the purge list will continue until the purge list is empty or until the purge stop watermark is reached.

Figure 44: Purge Start Watermark (Drive Percent Full) Option

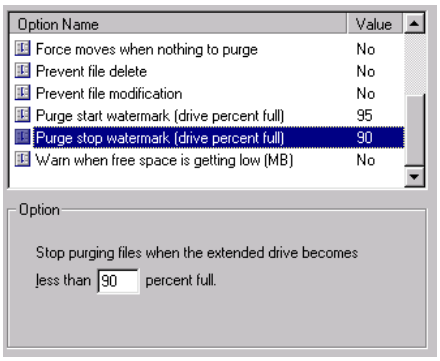


Enter the percentage of space used on the extended drive that, when exceeded, will cause DX to start processing the purge list to clear space on the extended drive. The default is 95% full.

Purge stop watermark (drive percent full):

Use this option to configure the percentage of used drive space that must be reached to cause DX to stop processing the purge list once processing has been triggered (by the purge start watermark configuration).

Figure 45: Purge Stop Watermark (Drive Percent Full) Option

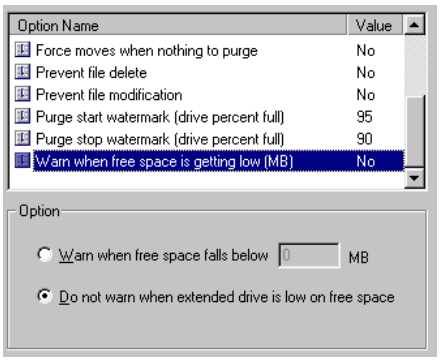


Enter the percentage of space used on the extended drive that when reached (after processing has started) will cause DX to stop processing the purge list. The default is 90% full.

Warn when free space is getting low (MB):

Use this option to configure whether DX will create a warning when the free space on the extended drive reaches a (configured) critical point. You may also enter the number of MB free space that will trigger the warning. Warnings can be sent out as Alerts using the Alerts tab in the Service Properties.

Figure 46: Warn When Free Space Is Getting Low (MB) Option



Warn when free space falls below ___ MB: select this option to configure warnings concerning low free space. Specify the amount of free extended drive space (in MB) that will trigger the warning.

Do not warn when extended drive is low on free space: select this option to disable low free space warnings. This is the default.

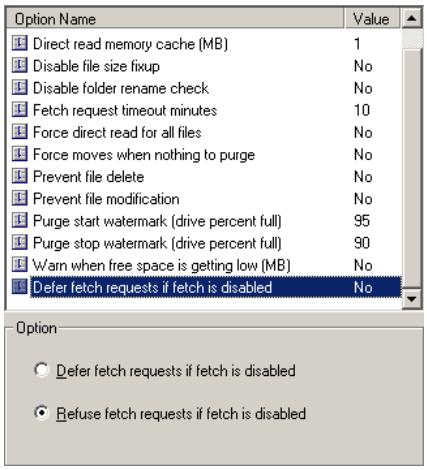
Defer fetch request if fetch is disabled:

If you have set the Allow fetches from media option in the media activity schedule to be inactive at any time, clients will be unable to retrieve purged files from media during those times. DX allows you to determine whether those requests for files will be rejected outright, or queued as deferred fetch requests until the fetch schedule becomes active again. If you select the Defer fetch requests if fetch is disabled option, all client file retrievals will be postponed until the Allow fetches from media schedule becomes active. At that time, all requested (queued) files will be retrieved from media. Refusing fetch requests is the default.

NOTE

This option only applies when you have set time-based restrictions to purged files by disabling the Allow fetches from media schedule in the media activity scheduler.

Figure 47: Defer Fetch Request If Fetch Is Disabled



Defer fetch requests if fetch is disabled: select this option to configure DX to accept but defer all requests for purged files made when the Allow fetches from media schedule has been disabled. The queued requests will be processed when the schedule becomes active again.

Refuse fetch requests if fetch is disabled: select this option to configure DX to reject all requests for purged files made during times when the Allow fetches from media schedule is inactive.

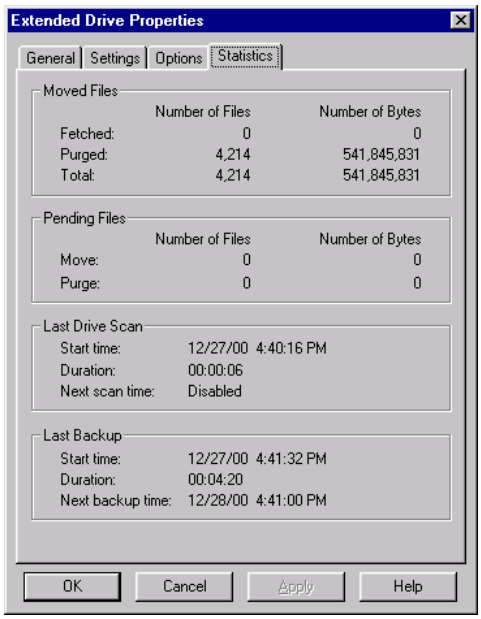
THE STATISTICS TAB

The Statistics tab provides statistics on files on the extended drive. These statistics are based on information collected during the last drive scan.

To view the statistics tab of the extended drive properties:

➲ With the Extended Drive Properties dialog box open, click the Settings tab.

Figure 48: Extended Drive Properties Dialog Box: Statistics Tab



The following table describes each of the items on the Statistics tab of the Extended Drive Properties dialog box:

Table 13: Extended Drive Properties: Statistics Tab Items

GROUP:	ITEM:	DESCRIPTION:
Moved Files:	**Fetched:**	The number of files fetched between the most recent drive scan and the drive scan immediately preceding it.
	Purged:	The number of files purged between the most recent drive scan and the drive scan immediately preceding it.
	Total:	The sum of the number of files fetched and the number of files purged between the most recent drive scan and the drive scan immediately preceding it.

GROUP:	ITEM:	DESCRIPTION:
Pending Files:	**Move:**	The number of files currently on the move list for the extended drive.
	Purge:	The number of files currently on the purge list for the extended drive.
Last Drive Scan:	**Start Time:**	The time at which the last drive scan for the extended drive began.
	Duration:	The amount of time that the last drive scan took to process.
	Next Scan Time:	The date and time of the next scheduled drive scan.
Last Backup:	**Start Time:**	The time at which the last backup of the extended drive began.
	Duration:	The amount of time that the last extended drive backup took to process.
	Next Backup Time:	The date and time of the next scheduled extended drive backup.

CHAPTER FOUR

DX COMPUTER ADMINISTRATION

DISKXTENDER contains several functions that allow you to administer, diagnose and troubleshoot DX. In addition, because the DISKXTENDER program functions as a Windows NT/2000 service, part of administering the DX computer includes administering the DX Service. This chapter discusses the available tools for administering your DX computer through the DX Administrator interface (and through the Windows Control Panel where applicable).

The Service Properties dialog box lets you view and manage DX computer configuration. You can view general information about the DX installation. You can also configure options to control the behavior of the hardware devices holding the media to which DX moves files. This chapter describes each of the tabs in the Service Properties dialog box.

Troubleshooting can be done using the diagnostic utilities in the Tools menu and the Service menu. You can look up error definitions in the Administrator using the Error Glossary feature. Information on each of these utilities is provided in this chapter.

MANAGING THE DX SERVICE

DX functions as a Windows NT/2000 service rather than a user-mode application. As a Windows service, DX can be configured for various startup settings, including Automatic startup, which starts DX upon Windows system startup, Manual startup, which allows you to start the service manually, and Disabled, which disables the service and does not allow it to start until that status is changed. As a Windows NT/2000 service, DX can continue to be active even after you log off Windows, as long as the computer is still running.

SERVICE MANAGEMENT VIA DX ADMINISTRATOR

With DX, you can perform all of the following functions:

- Check DX status on both local and remote DX computers.
- Start, pause, and stop DX service on local and remote DX computers.
- Set service startup options.

The DX service must be started in order for the Administrator to connect to it.

Opening Service Manager

DX service management can be performed through the DX Service Manager, which can be accessed from the Tools menu (located on the main menu) or the icon on the toolbar. You can select which DX computer to manage services for from the Computer drop-down list box, or by selecting an extended drive for a computer in the tree view.

To open the service manager:

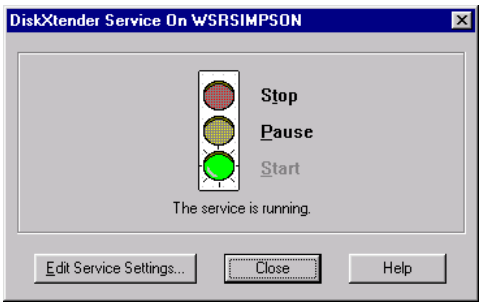
➲ You have two options:

- Select Service Manager from the Tools Menu.
- Click the Service Manager icon on the toolbar.

Figure 49: Service Manager Toolbar Button

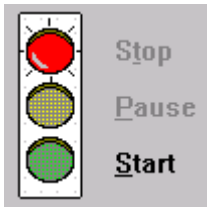
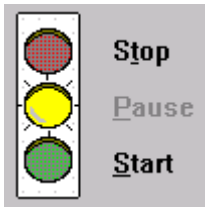
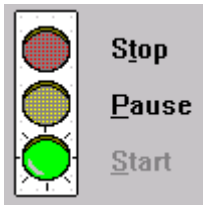
The Service Manager dialog box appears.

Figure 50: Service Manager Dialog Box



The Service Manager indicates the status of the DX service just below the traffic light signal in the center of the Service Manager dialog box. A green light indicates the service is started, a yellow light indicates the service is paused, and a red light indicates the service is stopped.

Table 14: Service Manager Status Indicator

STATUS:	INDICATOR APPEARANCE:	DESCRIPTION:
The DX service is stopped.		When the service is stopped, the red light is lit, and the word Start is active in the window.
The DX service is paused.		When the service is paused, the yellow light is lit, and the words Start and Stop are active in the window.
The DX service is started.		When the service is started, the green light is lit. The word Start is grayed-out and Pause and Stop are active in the window.

Starting, Pausing, and Stopping DX

Using the Service Manager dialog box, you can easily start and stop the DISKXTENDER Service for a DX computer.

NOTE ✍

You can start, stop and pause service for any registered DX computer, even if the selected computer is not currently connected through the administrator. DX computers that are not connected are listed in the tree view with a status of `(Disconnected)`.

Starting a DX service

Service Manager allows you to start the DX service for the currently active DX computer.

To start a DX computer:

1. Select the DX computer name in the Computer: drop-down list box.
2. Double-click the word Start in the Service Manager dialog box.
3. Click Yes in the "Start DISKXTENDER service?" message box.

Pausing a DX service

When you plan to pause DX service, it is a good idea to broadcast a message. This will give users enough time to finish their tasks before the pause is initiated.

To pause a DX service:

1. In the Service Manager dialog box, double-click Pause.
2. Click Yes in the "Pause DISKXTENDER service?" message box.

Stopping a DX service

Once again, when you plan to shut down the DX service, it is a good idea to broadcast a message telling users the service will be stopped. This will give users enough time to finish their tasks.

To stop a DX service:

1. In the Service Manager dialog box, double-click Stop.
2. Click Yes in the "Stop DISKXTENDER service?" message box.

NOTE ✍

To broadcast a shutdown message, simply proceed to the command prompt and type `net send /users "message"`. The message is then sent to all users connected to the DX computer.

Configuring Service Settings

The DX service, like any Windows NT/2000 service, can be set to start in a number of ways. For example, you may want DX service to start immediately upon system startup, or you may want the ability to manually start or even disable the DX service. The following lists the possible service settings for DX (or any Windows NT/2000 service).

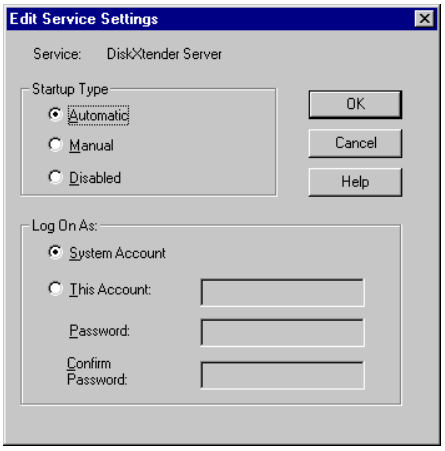
Table 15: DX Service Settings

SETTING:	DESCRIPTION:
Automatic	Automatic services start every time the system starts.
Manual	Manual services can be started by a user or by a dependent service.
Disabled	A disabled service cannot be run until the disabled status is changed.

To edit service settings:

1 In the Service Manager dialog box, click Edit Service Settings. The Edit Service Settings dialog box appears.

Figure 51: Edit Service Settings Dialog Box



2 Select the appropriate Startup Type option: Automatic, Manual, or Disabled.

3 In the Log On As section, This Account option is enabled by default and should contain the login and password entered on installation of DISKXTENDER on the computer. To select to have the service login as the System Account, enable that option.

4 Click OK to change the service settings or Cancel to abort.

NOTE

Check with your network administrator to determine if the System Account or This Account option is appropriate for your DX system.

SERVICE MANAGEMENT THROUGH WINDOWS

The Control Panel in Windows NT, and the Administrative Tools application in Windows 2000 allow you to modify the system while working in Windows. An icon in the Control Panel represents each option that can be changed. The Services option allows you to start and stop Windows NT services, as well as configure service parameters. The Services and Applications option in the Administrative Tools allow you to start and stop Windows 2000 services as well as configure service parameters. Control Panel and Administrative Tools options affect only the local machine.

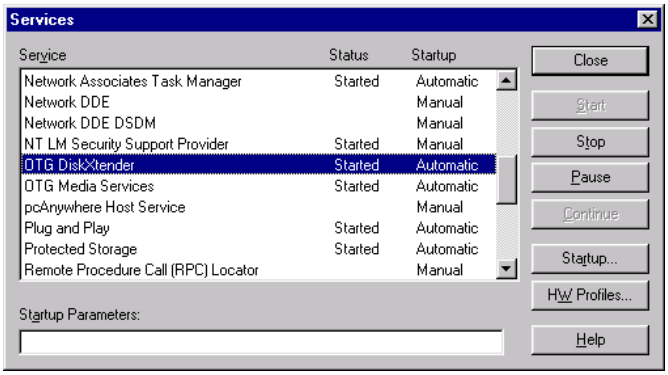
Starting and Stopping the DX service

The Control Panel in Windows NT and the Administrative Tools in Windows 2000 can be used to start and stop Windows services.

To access the service panel for Windows NT:

➲ On the DX computer, open the Windows Service Manager. From the Start menu, select Control Panel → Services.

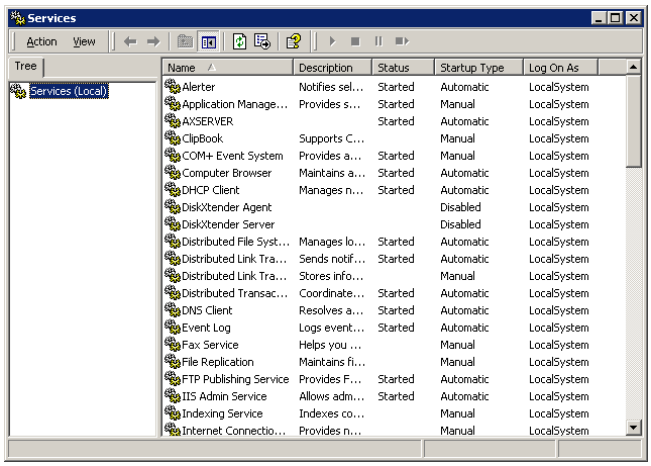
Figure 52: Windows NT Services Dialog Box



To access the service panel for Windows 2000:

1 On the DX computer, open the Windows Service Manager. From the Start menu, select Programs → Administrative Tools → Services. The Services dialog box appears.

Figure 53: Windows 2000 Services Dialog Box



2 From Windows Services dialog box, select OTG DISKXTENDER from the service list. From Windows 2000 Services dialog box, double-click OTG DISKXTENDER from the service list.

3 Select the Start, Stop, Pause, or Continue button as needed.

4 Select the Close button when finished.

Configuring Settings

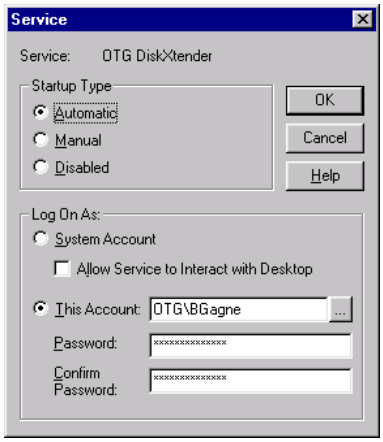
The Control Panel (Windows NT) and Administrative Tools (Windows 2000) can also be used to edit DX service settings. From the Services dialog box, Windows NT services can be set for automatic or manual startup (it can also be disabled).

To edit DX service settings via the Windows NT control panel:

1 In the Service dialog box, select OTG DISKXTENDER and click Startup.

2 The Service dialog box appears allowing startup options to be changed.

Figure 54: Service Dialog Box



3 Select the appropriate option for startup type.

4 In the Log On As section, This Account option is enabled by default and should contain the login and password entered on installation of DISKXTENDER on the computer. To select to have the service login as the System Account, enable that option.

5 Select OK to return to the Services dialog box and then Close to exit.

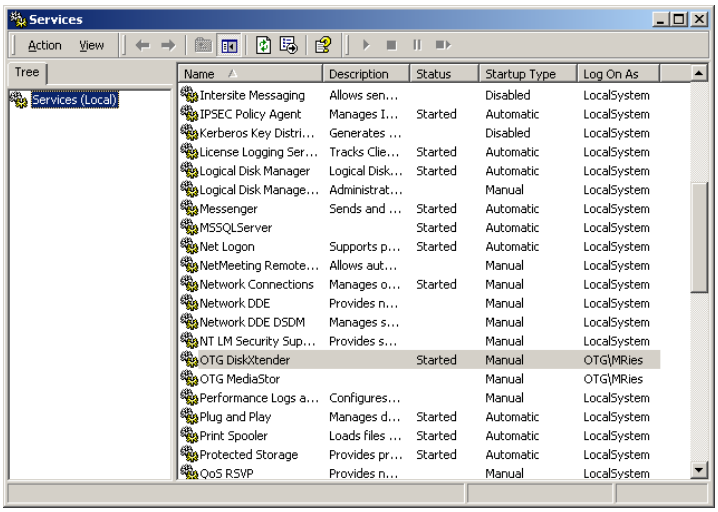
NOTE

Check with your network administrator to determine if the System Account or This Account option is appropriate for your DX system.

To edit DX service settings via the Windows 2000 service panel:

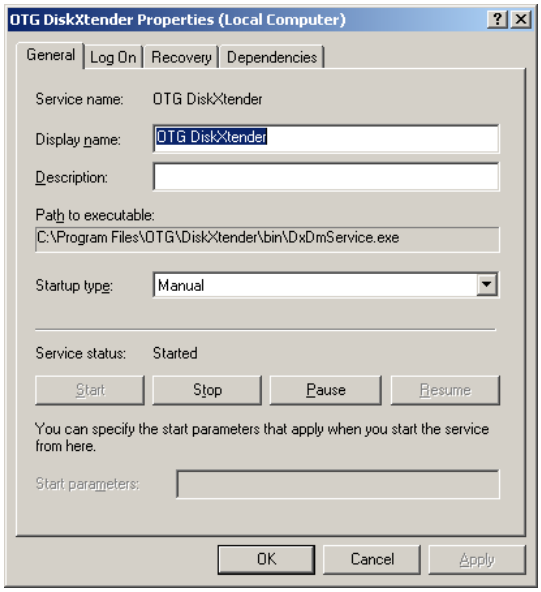
1 On the DX computer, open the Windows Service Manager. From the Start menu, select Programs → Administrative Tools → Services. The Services dialog box appears.

Figure 55: Windows 2000 Services Dialog Box



2 From the Services dialog box, double-click OTG DISKXTENDER from the service list. The OTG DISKXTENDER Properties dialog box appears.

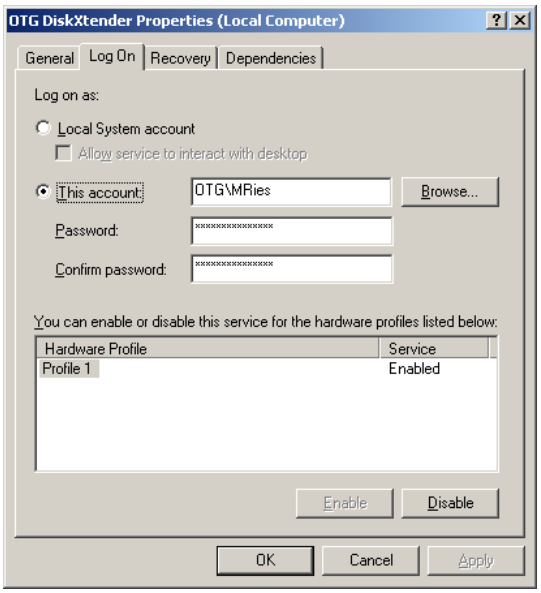
Figure 56: OTG DiskXtender Properties Dialog Box



3 Select the appropriate startup type option from the drop-down list in the Startup type section of the General tab.

4 Click on the Log On tab to activate it.

Figure 57: OTG DiskXtender Properties Dialog Box – Log On Tab



5 In the Log On As section, This Account option is enabled by default and should contain the login and password entered on installation of DISKXTENDER on the computer. To select to have the service login as the System Account, enable that option.

6 Click OK to return to the Services dialog box and then Close to exit.

NOTE

Check with your network administrator to determine if the System Account or This Account option is appropriate for your DX system.

CONFIGURING DX PROPERTIES

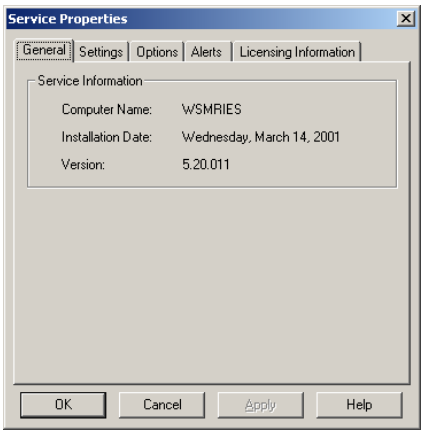
DISKXTENDER allows you to view and configure DX service properties in the Service Properties dialog box. You can view information relating to the DX installation on the currently active DX computer.

Each DX computer has a Service Properties dialog box that displays tabs of information pertaining to DX service. These tabs include: General, Settings, Options, and Alerts.

To open the DX Service Properties dialog box:

➲ From the Service menu, select Properties.

Figure 58: Service Properties Dialog Box



Click OK to close the dialog box and return to the DX Administrator.

GENERAL TAB

The General tab displays identifying information for the DX computer.

Figure 59: Service properties – General Tab

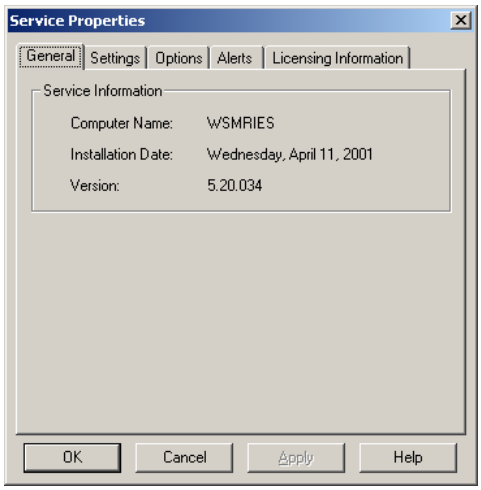


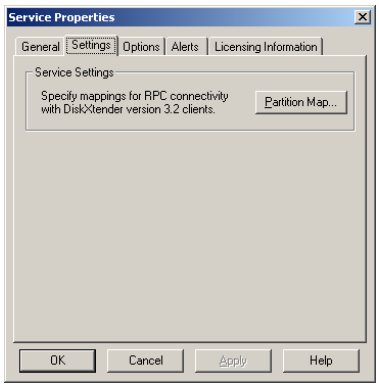
Table 16: DX Service Properties: General Tab

ITEM:	DESCRIPTION:
Computer Name	The Windows computer name for the DX computer.
Installation Date	The date that DX was installed (or updated).
Version	The installed version of DX.

THE SETTINGS TAB

The Settings tab of the DX Service Properties dialog box allows you to map a partition to the DX extended drive which allows clients (like DISKXTENDER clients or OTG's APPLICATIONXTENDER) to connect to the DX service via a Remote Protocol Connection (RPC).

Figure 60: Service Properties – Settings Tab



Creating the partition essentially creates a media folder that mimics a DX partition, and then you must map the partition to the extended drive where it resides.

Mapping Partitions

Partition mapping allows clients (like DX clients or OTG's APPLICATIONXTENDER) to connect to the DX service using a Remote Protocol Connection (RPC). Creating a partition creates a media folder that mimics a DX partition, and mapping the partition points to the extended drive on which the folder actually resides.

The Partition Map dialog box, accessed by clicking the Partition Map button on the Settings tab of the Service Properties dialog box, allows you to create, view, edit and delete mapped partitions.

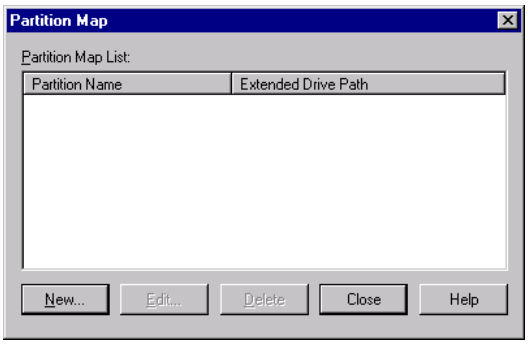
When creating a New Partition Map Entry, type in the name of the partition in the Partition Name dialog box and select the appropriate extended drive from the Extended Drive drop-down list.

When editing a Partition Map Entry, you can change the name of the partition in the Partition Name dialog box and/or select a different extended drive for the partition from the Extended Drive drop-down list.

To create a new partition:

1 On the Settings tab of the Service Properties dialog box, click Partition Map. The Partition Map dialog box appears.

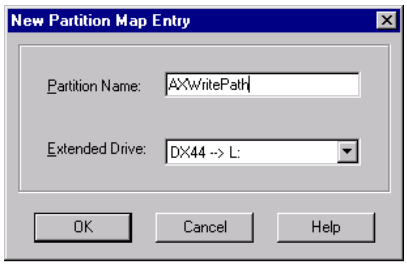
Figure 61: Partition Map Dialog Box



The Partition List in the Partition Map dialog box lists all mapped partitions and the extended drives to which they have been mapped. When you first access the dialog box, the list is empty.

2 In the Partition Map dialog box, click New. The New Partition Map Entry dialog box appears.

Figure 62: New Partition Map Entry Dialog Box

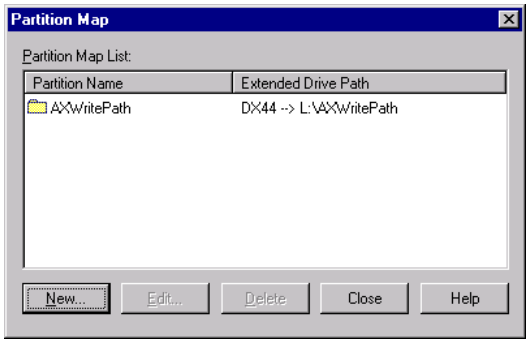


3 Enter a name for the partition in the Partition Name text box.

4 Select the extended drive for the partition from the Extended Drive drop-down list.

5 Click OK. You are returned to the Partition Map dialog box, which now lists the created partition and the extended drive to which it has been mapped.

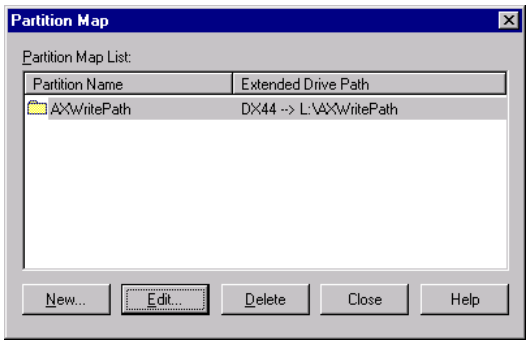
Figure 63: Partition Map Dialog Box



To edit a mapped partition:

1 On the Settings tab of the Service Properties dialog box, click Partition Map. The Partition Map dialog box appears.

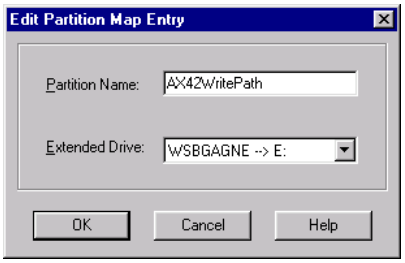
Figure 64: Partition Map Dialog Box



The Partition List in the Partition Map dialog box lists all mapped partitions and the extended drives to which they have been mapped.

2 Select the partition you want to change and click Edit. The Edit Partition Map Entry dialog box appears.

Figure 65: Edit Partition Map Entry Dialog Box

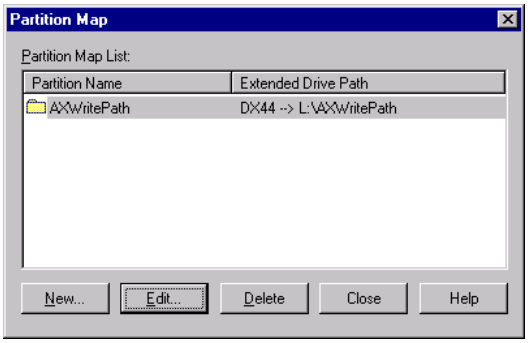


3 Make the necessary changes to the Partition Name and/or select a different extended drive from the Extended Drive drop-down list and click OK. The Partition Map dialog box reappears with the edits to the mapped partition.

To delete a mapped partition:

1 On the Settings tab of the Service Properties dialog box, click Partition Map. The Partition Map dialog box appears.

Figure 66: Partition Map Dialog Box



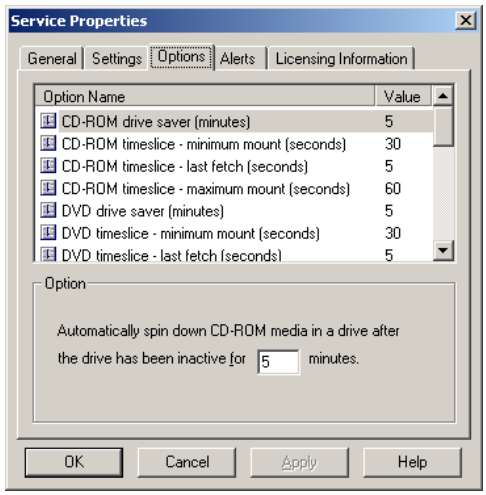
2 The Partition List in the Partition Map dialog box lists all mapped partitions and the extended drives to which they have been mapped.

3 Select the partition you want to delete and click Delete. The mapped partition is deleted.

THE OPTIONS TAB

The Options tab allows you to configure options that control the behavior of the hardware devices holding the media to which DX moves files. We recommend you pay special attention to the functions available through the Service Properties Options tab and configure them appropriately. These options are designed to make administering your DX Services easier and to improve performance.

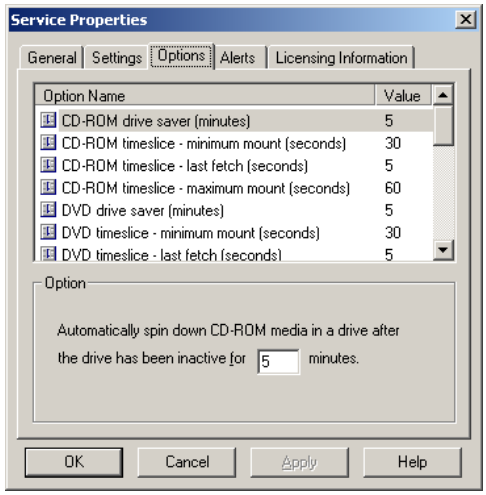
Figure 67: Service Properties – Options Tab



To view and configure the Service Properties Options tab:

1 With the Service Properties dialog box open, click the Options tab.

Figure 68: Service Properties – Options Tab



The upper section of the Options tab shows a list of DX Service options available for configuration. The option information in the bottom section of the Options tab changes to reflect the configuration aspects available for the option selected in the list in the top section.

Each of these options is discussed in detail below and in the order in which they appear in the list.

2 After configuring your DX Service options, you have three choices:

- Click OK to save your changes and close the Service Properties dialog box.
- Click Apply to save your changes without closing the Service Properties dialog box.
- Click Cancel to discard all changes and close the Service Properties dialog box.

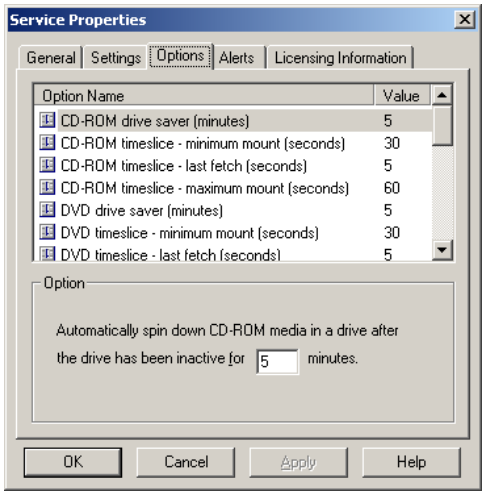
DX Service Options

Each of the configurable DX Service options is discussed below. The configuration options that appear in the lower part of the Options tab correspond to the option selected in the list in the upper part of the Options tab.

Drive saver minutes (CD-ROM):

Use this option to configure how long DISKXTENDER will wait after CD-ROM media becomes inactive before it will automatically spin down the media. Automatically spinning down media means that the media is still mounted, but lies idle until the media is requested by DX or dismounted. The default is 5 minutes.

Figure 69: Service Properties – Options Tab

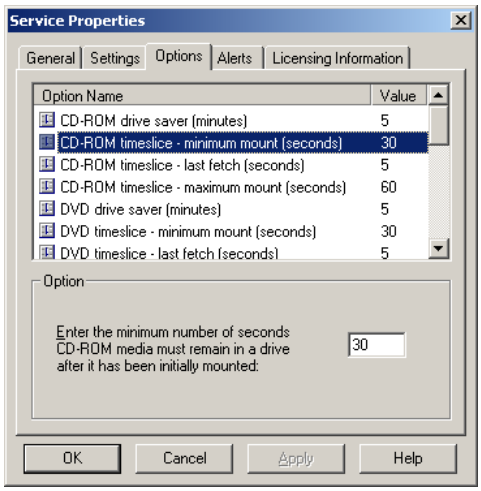


Enter the number of minutes you want DX to wait after CD-ROM media becomes inactive before it automatically spins down the media.

Timeslice value - minimum mount (CD-ROM):

Use this option to configure the minimum amount of time DISKXTENDER will keep CD-ROM media in a drive after it has been mounted. This means that CD-ROM media will remain in the drive for at least the amount of time you have entered. It will not automatically dismount CD-ROM media, and you will not be able to dismount the media before the time limit is up. The default is 30 seconds.

Figure 70: Service Properties – Options Tab

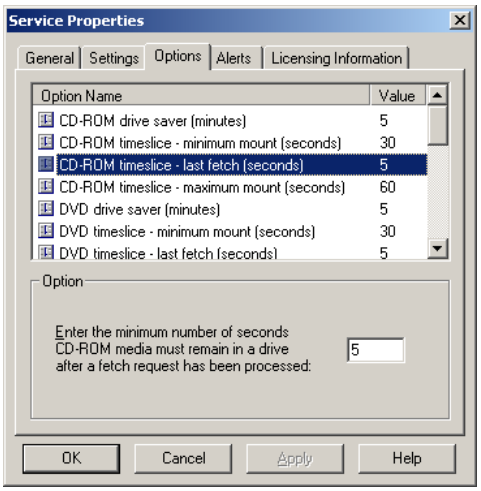


Enter the number of seconds you want DX to require CD-ROM media to stay in the drive before it can be dismounted.

Timeslice value - last fetch (CD-ROM):

Use this option to configure the amount of time CD-ROM media must remain mounted after DX has fetched data from that media. This means that CD-ROM media will not be dismounted immediately after a fetch, but instead DX will wait at least the entered amount of time before dismounting the media. The default is 5 seconds.

Figure 71: Service Properties – Options Tab

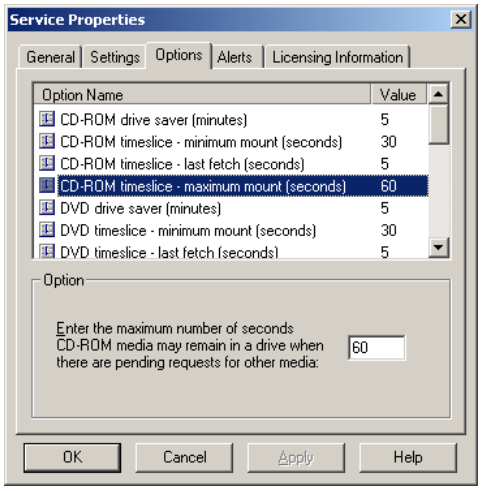


Enter the number of seconds you want DX to have to wait after completing a fetch before CD-ROM media can be dismounted.

Timeslice value - maximum mount (CD-ROM):

Use this option to limit the amount of time CD-ROM media can stay mounted if it is inactive, has no pending fetches, and there is other CD-ROM media that does have pending fetches. This allows DX to dismount inactive media in favor of other media that is being requested. The default is 60 seconds.

Figure 72: Service Properties – Options Tab

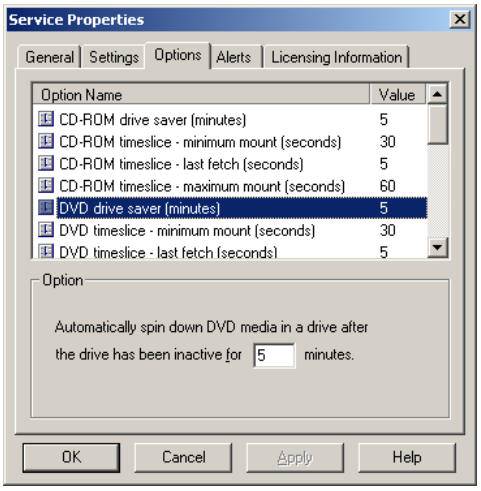


Enter the maximum number of seconds you want DX allow inactive CD-ROM media to remain in the drive if other media is being requested.

Drive saver minutes (DVD):

Use this option to configure how long DISKXTENDER will wait after DVD media becomes inactive before it will automatically spin down the media. Automatically spinning down media means that the media is still mounted, but lies idle until the media is requested by DX or dismounted. The default is 5 minutes.

Figure 73: Service Properties – Options Tab

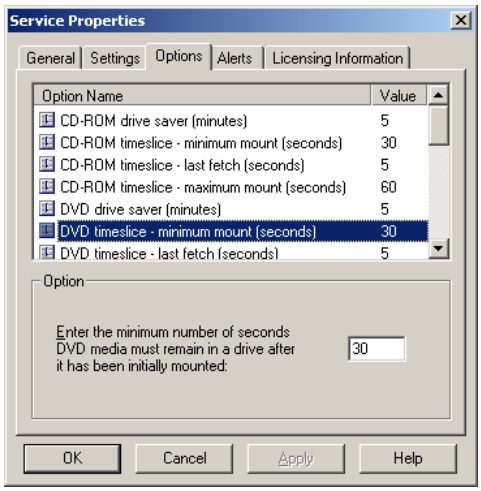


Enter the number of minutes you want DX to wait after DVD media becomes inactive before it automatically spins down the media.

Timeslice value - minimum mount (DVD):

Use this option to configure the minimum amount of time DISKXTENDER will keep DVD media in a drive after it has been mounted. This means that DVD media will be mounted for at least the amount of time you have entered. It will not automatically dismount DVD media, and you will not be able to dismount the media before the time limit is up. The default is 30 seconds.

Figure 74: Service Properties – Options Tab

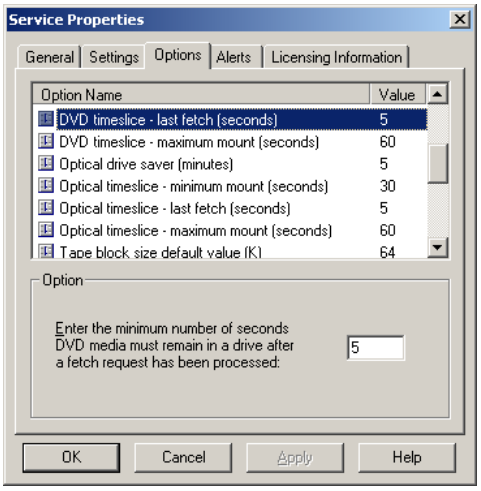


Enter the number of seconds you want DX to require DVD media to stay in the drive before it can be dismounted.

Timeslice value - last fetch (DVD):

Use this option to configure the amount of time DVD media must remain mounted after DX has fetched data from that media. This means that DVD media will not be dismounted immediately after a fetch, but instead DX will wait at least the entered amount of time before dismounting the media. The default is 5 seconds.

Figure 75: Service Properties – Options Tab

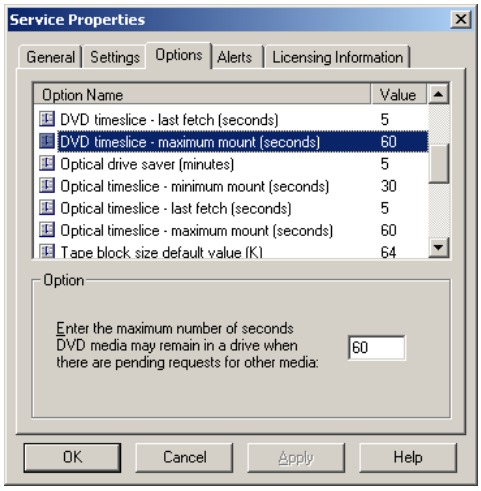


Enter the number of seconds you want DX to have to wait after completing a fetch before DVD media can be dismounted.

Timeslice value - maximum mount (DVD):

Use this option to limit the amount of time DVD media can stay mounted if it is inactive, has no pending fetches, and there is other DVD media that does have pending fetches. This allows DX to dismount inactive media in favor of other media that is being requested. The default is 60 seconds.

Figure 76: Service Properties – Options Tab

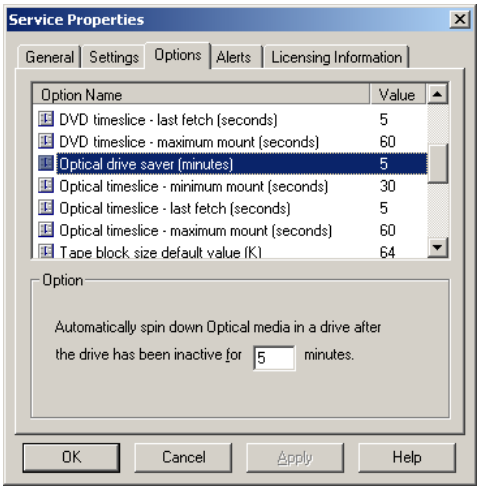


Enter the maximum number of seconds you want DX to allow inactive DVD media to remain in the drive if other media is being requested.

Drive saver minutes (Optical):

Use this option to configure how long DISKXTENDER will wait after Optical media becomes inactive before it will automatically spin down the media. Automatically spinning down media means that the media is still mounted, but lies idle until the media is requested by DX or dismounted. The default is 5 minutes.

Figure 77: Service Properties – Options Tab

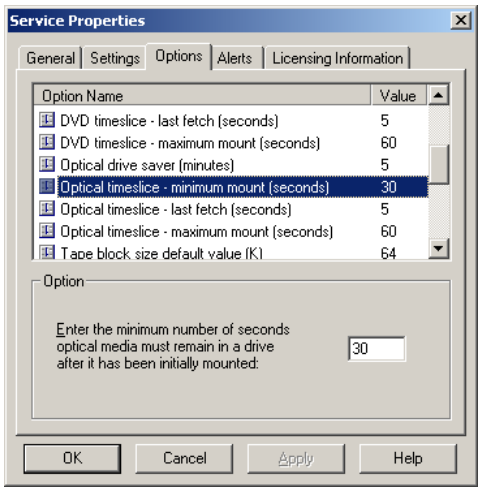


Enter the number of minutes you want DX to wait after Optical media becomes inactive before it automatically spins down the media.

Timeslice value - minimum mount (Optical):

Use this option to configure the minimum amount of time DISKXTENDER will keep Optical media in a drive after it has been mounted. This means that Optical media will be mounted for at least the amount of time you have entered. It will not automatically dismount Optical media, and you will not be able to dismount the media before the time limit is up. The default is 30 seconds.

Figure 78: Service Properties – Options Tab

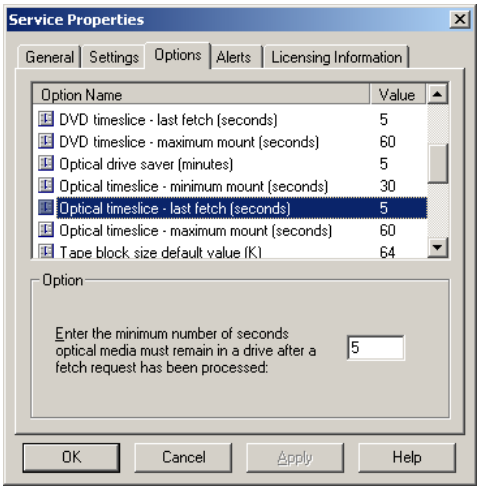


Enter the number of seconds you want DX to require Optical media to stay in the drive before it can be dismounted.

Timeslice value - last fetch (Optical):

Use this option to configure the amount of time Optical media must remain mounted after DX has fetched data from that media. This means that Optical media will not dismounted immediately after a fetch, but instead DX will wait at least the entered amount of time before dismounting the media. The default is 5 seconds.

Figure 79: Service Properties – Options Tab

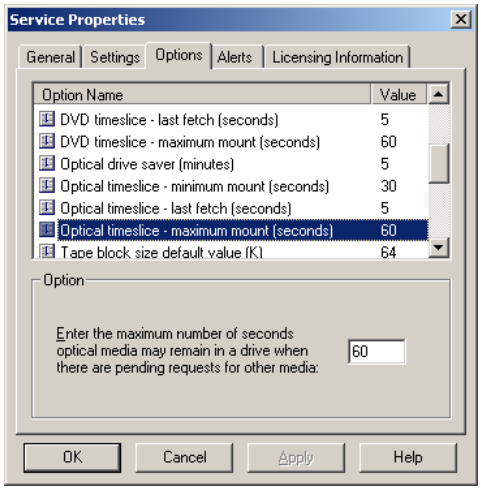


Enter the number of seconds you want DX to have to wait after completing a fetch before Optical media can be dismounted.

Timeslice value - maximum mount (Optical):

Use this option to limit the amount of time Optical media can stay mounted if it is inactive, has no pending fetches, and there is other Optical media that does have pending fetches. This allows DX to dismount inactive media in favor of other media that is being requested. The default is 60 seconds.

Figure 80: Service Properties – Options Tab

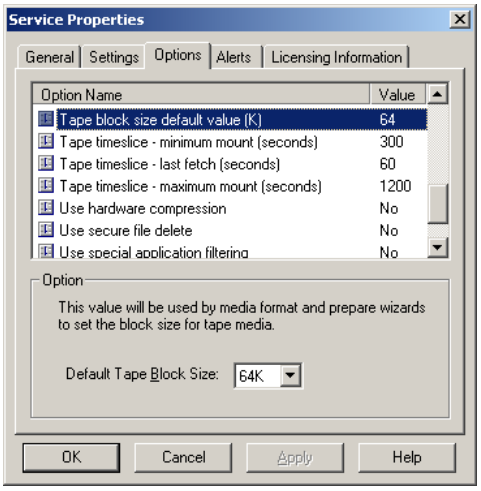


Enter the maximum number of seconds you want DX to allow inactive Optical media to remain in the drive if other media is being requested.

Tape block size default value (K):

Use this option to configure the size settings DISKXTENDER will use for formatting Tape media. The value you use will dictate the default block size of Tape media that DX formats. This value will be used by the Media Format and Prepare wizards to set the default block size of the Tape media. The default is 64 kilobytes.

Figure 81: Service Properties – Options Tab

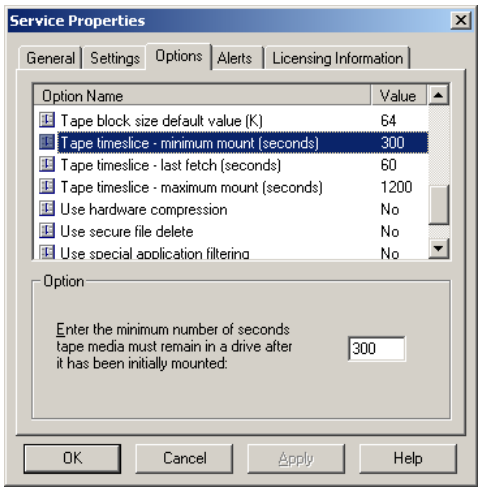


Enter the number of kilobytes that you want DX to use as the default block size when DX formats Tape media.

Timeslice value - minimum mount (Tape):

Use this option to configure the minimum amount of time DISKXTENDER will keep Tape media in a drive after it has been mounted. This means that Tape media will be mounted for at least the amount of time you have entered. It will not automatically dismount Tape media, and you will not be able to dismount the media before the time limit is up. The default is 300 seconds.

Figure 82: Service Properties – Options Tab

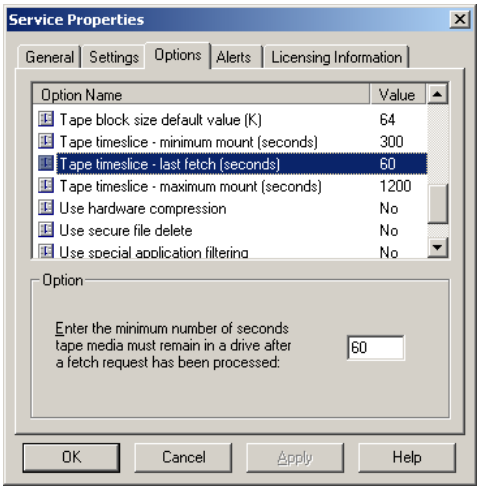


Enter the number of seconds you want DX to require Tape media to stay mounted before it can be dismounted.

Timeslice value - last fetch (Tape):

Use this option to configure the amount of time Tape media must remain mounted after DX has fetched data from that media. This means that the Tape media will not be dismounted immediately after a fetch, but instead DX will wait at least the entered amount of time before dismounting the media. The default is 60 seconds.

Figure 83: Service Properties – Options Tab

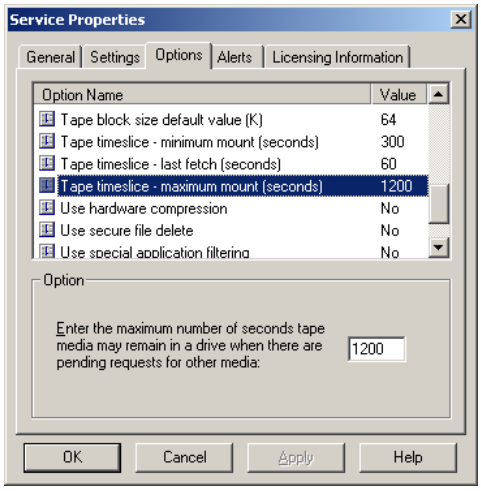


Enter the number of seconds you want DX to have to wait after completing a fetch before Tape media can be dismounted.

Timeslice value - maximum mount (Tape):

Use this option to limit the amount of time Tape media can stay mounted if it is inactive, has no pending fetches, and there is other Tape media that does have pending fetches. This allows DX to dismount inactive media in favor of other media that is being requested. The default is 1200 seconds.

Figure 84: Service Properties – Options Tab



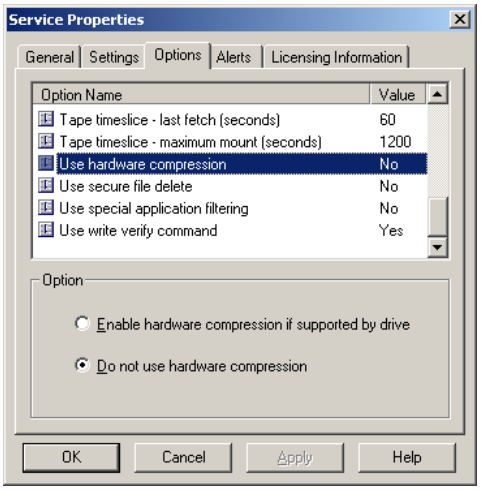
Enter the maximum number of seconds you want DX to allow inactive Tape media to remain in the drive if other media is being requested.

Use hardware compression:

Use this option if you want DX to compress data. Data compression allows DX to store data in a format that requires less space than usual. It enables devices to transmit the same amount of data in fewer bytes, thus not requiring as many resources to fetch data.

Not all hardware devices support data compression. This option will only work with devices that support data compression. The default is Do not use hardware compression.

Figure 85: Service Properties – Options Tab



Enable hardware compression if supported by drive: Select this option if you want to compress migrated data. This will only work if the device supports data compression.

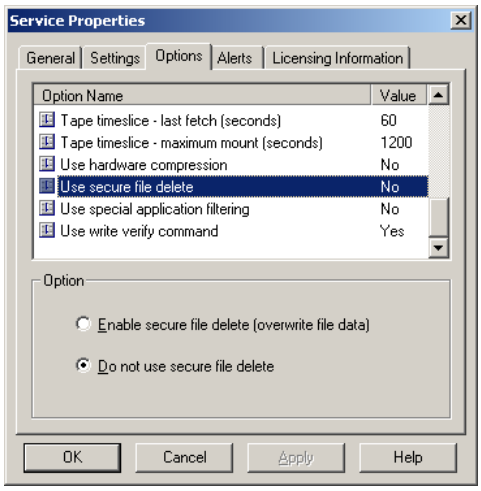
Do not use hardware compression: Select this option if you do not want to compress data. This is the default option.

Use secure file delete:

Normally, when a file is deleted on OSS-formatted Erasable Optical media, a media transaction is sent to the media marking the file for deletion. This ensures that the file will be removed the next time the media is compacted and formatted; however, it does not cause the file to be deleted from the media at the time of delete.

Enable this option to cause DX to send a file transaction to media that causes the file data on the media to be overwritten when the transaction is written out to media. This ensures that rather than just removing the file pointer and marking the file data for deletion, that the file on the media is rendered completely irretrievable. The default is Do not use secure file delete.

Figure 86: Service Properties – Options Tab



Enable secure file delete (overwrite file data): Select this option to cause DX to send a file transaction to media that causes the file data on the media to be overwritten when the transaction is written out to media.

Do not use secure file delete: Select this option to only remove the file pointer from the extended drive, and mark the file data on media for deletion at the time of compaction and reformat. This is the default.

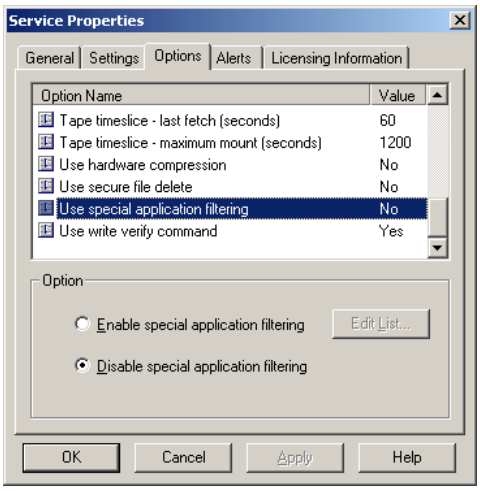
NOTE ✍

This option only functions for Erasable Optical (Magneto Optical) media using the OTG File System (OSS formatted).

Use special application filtering:

Use this option to allow DX to force a type of data access (listed below) for purged files when those files are called by specific software applications. For example, you may not want your virus scanning software to recall purged file data from media during a virus scan. Or you may want a program to read files directly from the media. DX installation provides a default list of applications set for filtering. You may add to this list as necessary. See Table 17 below for a default list of applications set for filtering. The default is Disable special application filtering.

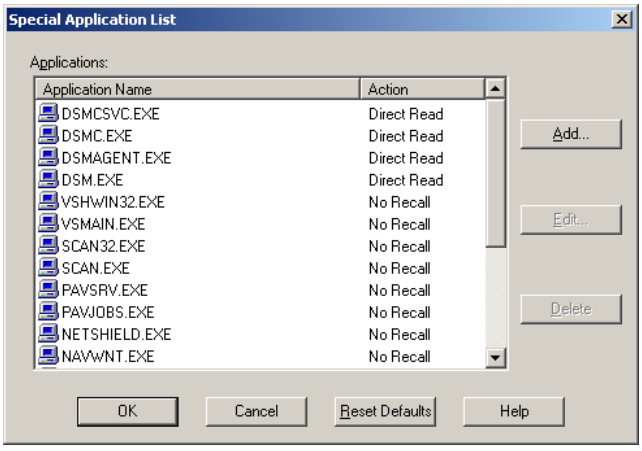
Figure 87: Service Properties – Options Tab



Enable special application filtering: Select this option to force a type of data access for purged files when those files are called by specific software.

1 If this option is selected, click Edit List. The Special Application List dialog box appears.

Figure 88: Special Application List Dialog Box



2 Highlight the Application Name and click Edit to change the action for each application.

Direct Read: Select this access option if you want the software application to read the purged file data directly from the media.

No Recall: Select this access option if you want the software application to ignore purged files (program will see purged files as 0 bytes and skip over them).

3 After you have edited the application actions, click OK.

Disable special application filtering: Select this option if you do **not** want DX to force a type of data access for purged files.

WARNING

There are four Tivoli Backup executables listed in the Special Application list: DSM.EXE, DSMC.EXE, DSMCSVC.EXE and DAMAGENT.EXE. They are set to Direct Read by default and should remain that way. If you are using Tivoli Storage Manager (TSM) as your media service, changing the Action for these four files to No Recall can result in potential data loss.

Table 17: Default Applications Listed for Filtering

SPECIAL APPLICATION NAME	EXE NAME	EXE TYPE	DEFAULT ACTION
AVX Anti-Virus	avxmonitornt.exe	Service	No recall
AVX Anti-Virus	avxw.exe	GUI	No recall
AVX Anti-Virus	avxc.exe	CmdLine	No recall
AVX Anti-Virus	avxlite.exe	Schedule	No recall
Dr. Solomon's Anti-Virus	mcshield.exe	Service	No recall
Dr. Solomon's Anti-Virus	scan32.exe	GUI	No recall
F-Secure Anti-Virus	fpavsvc.exe	Service	No recall
F-Secure Anti-Virus	fpwm32.dll	GUI	No recall
McAfee Anti-Virus	netshield.exe	Service	No recall
McAfee Anti-Virus	vsmain.exe	GUI	No recall
McAfee Anti-Virus	scan.exe	CmdLine	No recall
McAfee Anti-Virus	vshwin32.exe	schedule	No recall
Norton Anti-Virus	navwnt.exe	Service	No recall
Panda Anti-Virus	pavsrv.exe	Service	No recall
Panda Anti-Virus	iface.exe	GUI	No recall
Panda Anti-Virus	pavjobs.exe	schedule	No recall
Tivoli Backup	dsm.exe	GUI	Direct Read
Tivoli Backup	dsmc.exe	CmdLine	Direct Read
Tivoli Backup	dsmagent.exe	Service	Direct Read
Tivoli Backup	dsmcsvc.exe		Direct Read

WARNING

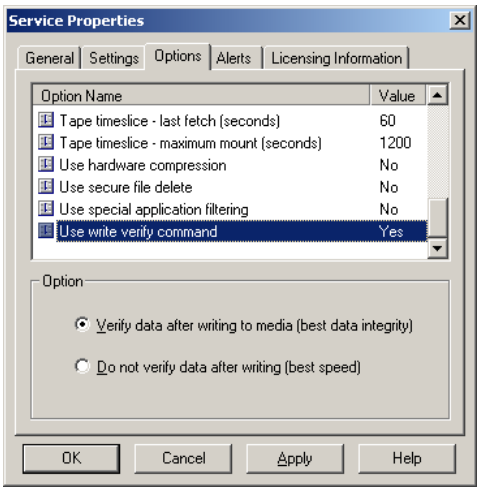
DX allows you to delete applications from this list; however, deleting default applications set by DX may cause system problems (including deadlock) due to both the application and DX attempting to run conflicting processes at the same time.

Use write verify command:

The Write Verify command functions by sending data to the device buffer, writing the data to the media, then reading the data from the media and comparing it to the data in the buffer. This ensures that the media properly accepted the file data, and that no error occurred during migration.

It is possible to disable write verification for your DX system by disabling this option. However, note that without write verification, you have no assurance that data has been correctly transferred to media. This option is particularly recommended if you frequently select to purge files immediately after move.

Figure 89: Service Properties – Options Tab



Verify data after writing to media (best data integrity): Select this option to enable the Write Verify command. This is the default.

Do not verify data after writing (best speed): Select this option to disable write verification. Remember, selecting this option gives you no assurance that data has been correctly transferred to media.

WARNING

By disabling this option, you have removed the primary safeguard against undetected data corruption on media. Note that you will be responsible for any damage to your data incurred as a result of disabling this option.

NOTE

This option only applies for Erasable Optical (Magneto Optical), WORM and DVD media using the OTG File System. Write verification for NTFS and FAT systems is not managed by DX.

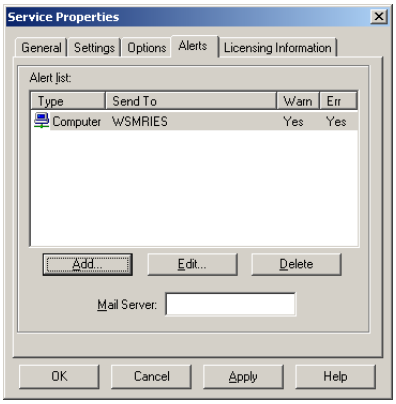
NOTE

If you have performance concerns, it is recommended that you improve performance by upgrading your hardware, rather than by disabling this option.

THE ALERTS TAB

The Alerts tab allows you to configure DISKXTENDER to send alerts to specific users, workstations, email addresses, or domains. There is also a text box on the bottom of the Alerts tab allowing you to specify the SMTP Mail Server you want to use to send the configured email alerts. Details on configuring alerts are discussed below.

Figure 90: Service Properties – Alerts Tab



Configuring Alerts

An alert is a message box that instantaneously appears notifying the recipient of an error or warning on the DX system. Alerts that are configured for the DX computer will broadcast any warnings or errors relating to the DX computer or DX service.

The alerts tab allows you to enter the name of the mail server being used to distribute the alerts. You can add email addresses, or the names of domains, computers, or users on your network to the Send Alerts To list. For each category added, you can choose whether to configure notification of warnings, errors, or both.

NOTE

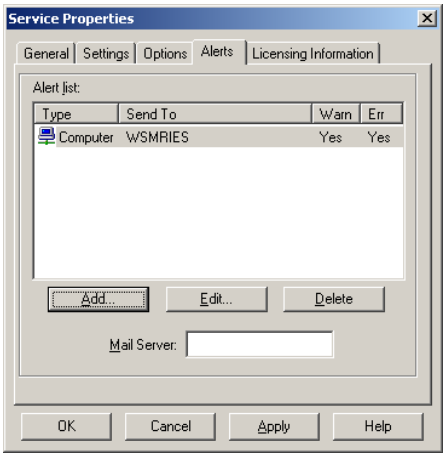
If no error or warning notification is enabled for an assigned user or computer, then no alerts will be broadcasted to that user or computer. You can leave a name on the list and then disable both options to temporarily hinder alerts.

The computer or user names entered in the Alerts dialog box should correspond to existing user or computer names on your Windows NT network.

To configure alert settings:

1 From the Service Properties dialog box click the Alerts tab. The Alerts tab appears.

Figure 91: Service Properties – Alerts Tab

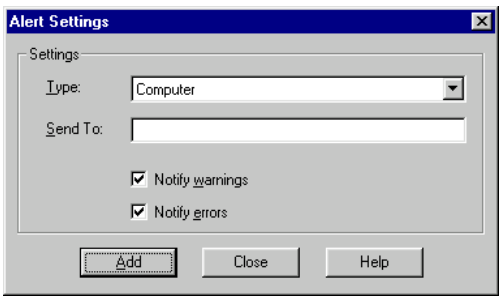


The alerts tab provides a text box at the bottom in which you can enter the name of the mail server that will be used to distribute configured email alerts. The well-known port for SMTP servers is supported, so no additional configuration should be required for use with mail servers, routers or firewalls.

2 If configuring email alerts, type in the name of the mail server being used to deliver the alerts in the Mail Server text box at the bottom of the Alerts tab.

3 Click Add. The Alert Settings dialog box appears.

Figure 92: Alert Settings Dialog Box



4 From the Type drop-down list box, select the type of alert that you would like to configure. You have the following choices:

- Computer
- Domain
- E-Mail
- User

5 In the Send To text box, enter the email address, or the domain, user, or computer name to which you want alerts to be sent.

6 Below the Send To box you may configure the following options:

- If you want the alert to be sent for warnings and errors, enable both the Notify warnings and Notify errors checkboxes.
- If you want an alert to be sent for warnings but not for errors, enable the Notify warnings checkbox.
- If you want an alert to be sent for errors but not warnings, enable the Notify errors checkbox.
- If you want to temporarily disable the alert, disable both the Notify warnings and Notify errors checkboxes. You can enable either of these options at a later time.

7 When you are finished choosing the alert settings, click Add. The information in the Send To box disappears as the recipient is added to the alerts listing.

8 After a recipient has been added, you may enter another recipient into the Send To box and/or change the Type setting and options and click Add again.

9 When you have finished configuring all of the alerts desired, click Close on the Alert Settings dialog box. The chosen alert configurations appear in the Alert list in the Alerts tab.

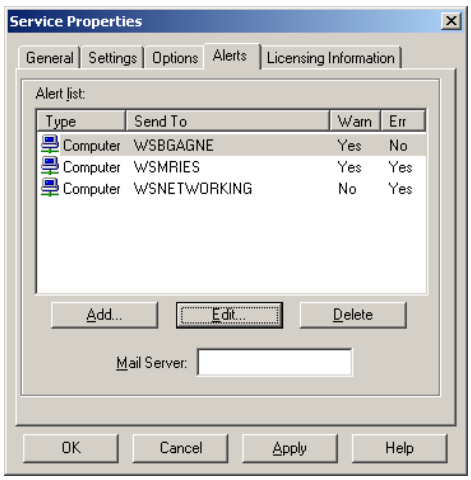
Once Alerts have been established, you may use the Alerts tab in the service properties dialog box to edit or delete configured alerts.

To change configured alert settings:

1 From the Service menu in the Administrator, select Properties.

2 Select the Alerts tab. The Alerts tab appears, listing all currently configured alerts.

Figure 93: Service Properties – Alerts Tab



3 You have the following choices:

- To remove an alert from the list, select the alert in the list and click Delete. A message appears asking you to confirm the deletion. Click Yes. The alert is deleted.
- To edit an alert, select the alert in the list and click Edit. The Alerts dialog box appears. Change the Type and Send To and other setting information as appropriate and click Add, then click Close.

4 When you have made all necessary changes to the Alert list, click OK to save the changes and close the Service Properties dialog box or click Apply to apply the changes without closing the Properties dialog box.

THE LICENSING INFORMATION TAB

The Licensing Information tab displays license information for the DX computer.

Figure 94: Service Properties – Licensing Information Tab

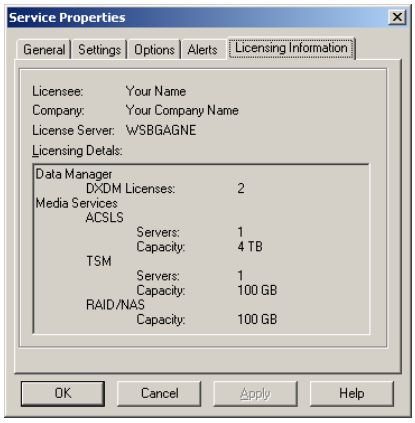


Table 18: DX Service Properties: Licensing Information Tab

ITEM:	DESCRIPTION:
Licensee	The user information entered during the DX installation.
Company	The company information entered during the DX installation.
License Server	The name of the computer containing the installation of License Server that is currently administering the DX licenses for this DX service.
Licensing Details	Detailed description of the DX licenses configured in the License Server. This includes the number of DX Licenses and type and file size capacity of the media services available for use with DX.

DISKXTENDER DIAGNOSTIC TOOLS

DISKXTENDER has built in utilities for monitoring events, errors, and warnings on the extended drive. The Extended Drive Viewer contains a listing of all DX events, errors, and warnings. This information is also logged to event, error, and warning logs. Errors and warnings are logged automatically while other events are not logged by default (however, event logging can be enabled).

TRACKING DX EVENTS, ERRORS AND WARNINGS

The logs provide a quick look at the activities of DX. They allow you to monitor all aspects of extended drive events. Logs can help identify and solve potential problems during runtime that might otherwise become critical problems if ignored. DX event tracking utilities include:

- The Extended Drive Viewer: Where events, errors, and warnings all appear in one location.
- Event Log: Used for debugging and problem identification through a chronological listing of DX events related to that extended drive.
- Error Log: Used for detecting and diagnosing extended drive errors.
- Warning Log: Used to warn you of possible problems on the extended drive.

Using the Event Viewer

The Extended Drive Viewer displays all events for the extended drive. If you do not want to automatically save a record of the events on the extended drive, you can disable event *logging* in the Extended Drive Event Configuration dialog box and simply monitor events in the Extended Drive Viewer. You can also take a "snapshot" of the contents of the Extended Drive Viewer and save it for later use.

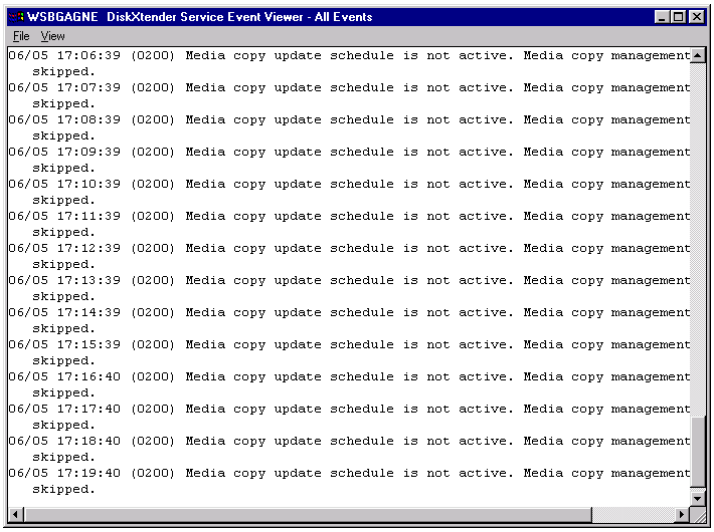
Opening the Event Viewer

The Event Viewer allows you to view recent events even if event logging is disabled.

To open the event viewer

➲ From the Service menu, select Event Viewer. The Service Event Viewer window appears.

Figure 95: Service Event Viewer: All Events



Taking Snapshots

A snapshot can be taken of a viewer in order to save or "capture" the contents of the viewer as displayed at the time of the snapshot. A snapshot is a capture of up to the last 2048 lines of the Extended Drive Viewer.

To take a snapshot of the event viewer:

➲ From the File menu in the Service Event Viewer, select Snapshot.

A snapshot is then taken of the current viewer. RtfPad automatically opens, displaying the viewer's text. DX also creates a temporary file when the snapshot is taken. This file should be saved, so that you can view the information at a later time (once RtfPad is closed).

USING DX LOGS

In addition to the viewing capabilities offered by the Event Viewer, DX also contains log features that save events, errors, and warnings for the DX computer to a log file.

Opening DX Logs

You can open the DX Event, Error, and Warning logs from the Service menu. Each log lists events, warnings, or errors relating to DISKXTENDER. When opened, the logs

slow down DX performance. When closed, the impact they have on performance is insignificant. The logs should be opened and used only for debugging purposes.

To open a log:

1 From the Service menu, select Event Logs.

2 From the Event Logs menu, select whether to view the All Events, Warnings Only or Errors Only log.

3 The selected log opens in RtfPad and can be printed or saved.

Event Log

There are three Event Logs available under the Event Log command in the Service menu: All Events, Error Log and Warning Log. As their names indicate, the Error Log lists only DX system errors, the Warning Log lists only DX system warnings and the All Events Log (also called the Service Event Log) lists all activities on the DX service.

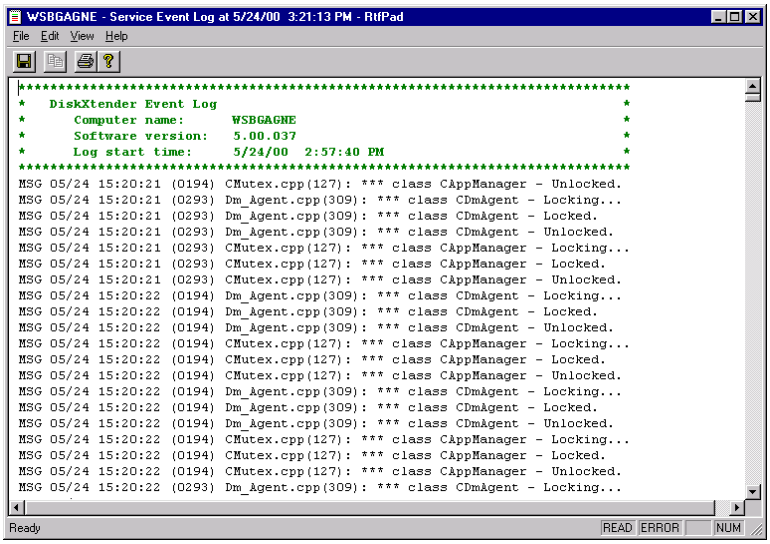
Event Logs are used for debugging purposes only. It provides logging services for internal subsystems to assist with problem identification. If technical support is needed, you may be asked to open this log and specify the information reported.

Each Event Log displays both the time and a message for each event. The most recent events are last on the list (the list automatically scrolls to display the most current events).

To display the all events log:

➲ From the Service menu, select Event Logs and then select All Events. The log opens in RtfPad and can be printed or saved.

Figure 96: Service Event Log – All Events



NOTE

Service event logging is disabled by default. In order to enable logging of service events, you must uncheck the Disable log file (viewer only) option in the Event Settings. For instructions, see *Configuring DX Service Event Logging* on page 123.

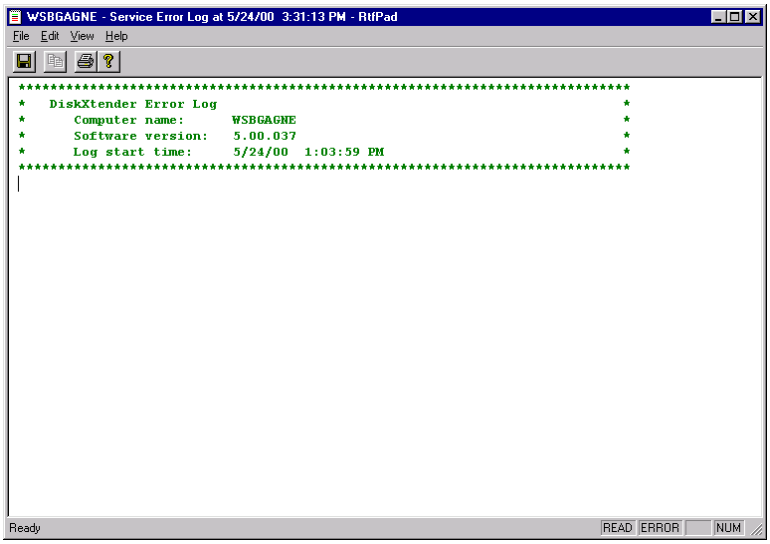
Error Log

The Error Log is a useful tool for detecting and diagnosing system errors. Every DISKXTENDER error passes through the Error Log. All system errors are displayed in both Event Viewer and Event Log, but the Error Log provides a more precise focus for error tracking. Because these tools are necessary for system diagnostics, error logging cannot be disabled.

To display the error log:

➲ From the Service menu, select Event Logs and then select Error Log. The log opens in RtfPad and can be printed or saved.

Figure 97: Service Error Log



Warning Log

The Warning Log includes caution messages to warn you of possible problems in DX. The Warning Log provides warnings for problems such as:

- Requests for media (either to read or write to a file) that could not be satisfied because the media was not present on the DISKXTENDER system (not in any drive or library).

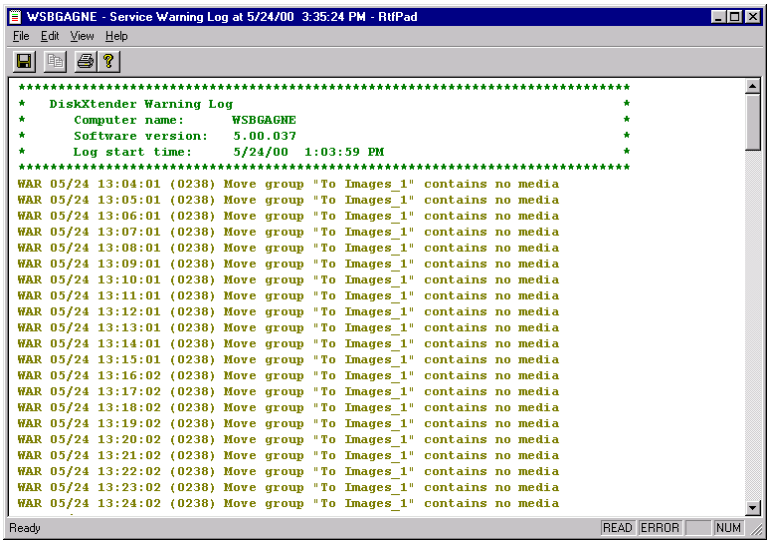
- Files that could not be migrated, due to media being full or no more media being available in a move group.
- Disk full warnings for the NTFS volume on the extended drive.

The purpose of this list is to provide a simpler means of discovering where problems exist that are hindering DISKXTENDER performance; for example, which media needs to be added to the system to ensure that all user requests are fulfilled. These warnings also pass through the Extended Drive Viewer and the Event Log, but the Warning Log provides a more specific focus on these important warnings.

To display the warning log:

➲ From the Service menu, select Event Logs and then select Warning Log. The log opens in RtfPad and can be printed or saved.

Figure 98: Service Warning Log



The Warning Log displays the time and a message for each event. The most recent events are listed last in the list (the list automatically scrolls to display the most current events).

USING RTFPAD

The Service Event, Warning, and Error Logs appear in RtfPad. You can view the event logs at any time to monitor the progress of scheduled events or to troubleshoot problems. Logs from RtfPad can be saved or printed, or you can send a copy of the log via email. Using RtfPad, you can also easily find and view descriptions of system errors.

Saving, Sending and Printing Logs

Logs that appear in RtfPad can be saved, sent by email, or printed. These commands, accessed through the File menu of RtfPad are standard Windows commands, and function in RtfPad as they would in any Windows-based program.

Error Format

RtfPad can be viewed in a black-and-white interface, or with color to contrast errors and warnings from other events. If RtfPad is set for Error Format, errors appear in red text and warning messages appear in yellow text so that they are easily noticed. Header text appears in green.

To set RtfPad to display information in error format:

➲ From the View menu, select Error Format. This is a toggle command. When enabled (selected), a checkmark appears to the left of the command.

Errors appear in red text when enabled, while message-logging enabled/disabled appears in green and warnings appear in yellow text.

To disable error format:

➲ From the View menu, select Error Format again. This is a toggle command. When disabled, no checkmark appears to the left of the command.

RtfPad Error Lookup

When an error appears in RtfPad, an error number appears in parentheses with the error message. This error number identifies the error and allows you to use the RtfPad error lookup feature to obtain additional information about the error, including the error name and a brief description.

To obtain additional information about an error:

1 With the error log open, highlight the error number.

2 You have the following choices:

- From the View menu, select Error Lookup.
- Press <F2>.

A dialog box appears with the error name and description.

CONFIGURING DX SERVICE EVENT LOGGING

Event logging is necessary only when tracing events of interest to you. You can configure which events are traced. Because tracing events impedes system performance, no events are traced by default, though errors and warnings are logged automatically because of their necessity for troubleshooting.

DX allows you to configure which events are logged, and whether to trace the local service events or remote procedure calls (remote administration events).

For all logs, you can control the format of the log entries, and adjust the maximum sizes for the log files. For the Event Log, you can disable logging and enable the tracing of events upon startup. You can enable logging to the Windows Application Log for the Warning and Error Logs.

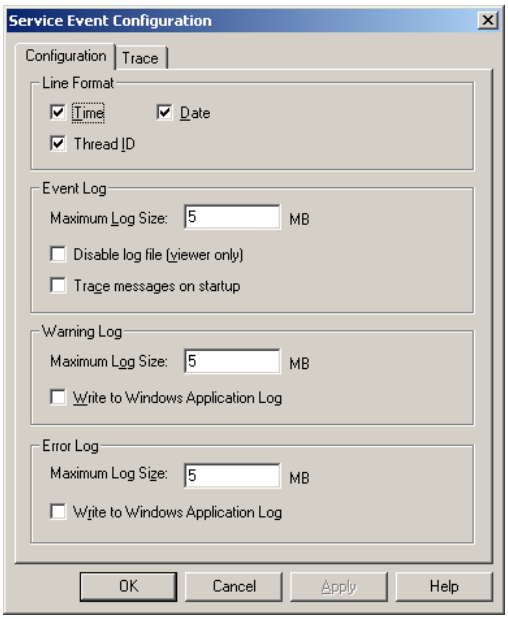
Log Properties Configuration

You can control several aspects of logging functionality, including log entry format, log file size, DX event logging, automatic startup of event logging and logging of errors and warnings to the Windows Application Log.

To configure log properties:

1 From the Service menu, select Event Settings. The Service Event Configuration dialog box appears. The Configuration Tab is active by default.

Figure 99: Service Event Configuration Dialog Box



2 In the Line Format section, enable or disable logging of particular event attributes by clicking in the checkbox next to each option to place or clear the checkmark.

Table 19: Service Event Configuration: Line Format Options

ATTRIBUTE:	DESCRIPTION:
Time:	The time the event occurred
Date:	The date the event occurred
Thread ID:	The thread which the event used to communicate with the processor

3 To disable logging to the event log, click the checkbox Disable log file (viewer only).

4 If event logging is enabled, the Maximum Log Size text box is active. Use this box to set the maximum event log size by typing the number of megabytes into the Maximum Log Size text box. The default size is 5 megabytes.

5 To automatically initiate event logging when DX is started, click a check in the checkbox next to Trace messages on startup.

6 In the Warning Log, enter the maximum size for the Warning Log file. The default size is 5 megabytes. You can also enable logging to the Windows Application Log by clicking a check in the checkbox next to the Write to Windows Application Log option.

7 In the Error Log section, enter the maximum size for the Error Log file. The default size is 5 megabytes. You can also enable logging to the Windows Application Log by clicking a check in the checkbox next to the Write to Windows Application Log option.

NOTE

The Warning Log and Error Log files are always written and cannot be disabled.

Event Tracing Configuration

You can configure which events are to be traced and reported to the Event Log. By default, all event tracing is disabled. Unless instructed to enable tracing of events by a technical support representative, you can leave the default settings in place.

NOTE

Event tracing configuration affects events only; errors and warnings relating to events of the types listed are logged regardless of event tracing settings.

WARNING

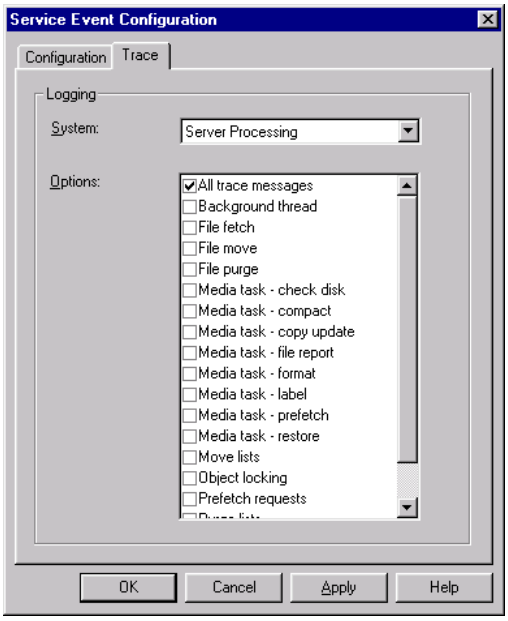
Enabling event tracing hinders performance and should be performed only when debugging is required.

To configure events to be logged:

1 From the Service menu, select Event Settings. The Service Event Configuration dialog box appears.

2 Click the Trace tab. This tab allows you to configure which events will be logged. The System drop-down list displays Server Processing by default.

Figure 100: Service Event Configuration: Trace Tab



3 From the System drop-down list, select whether to trace Server Processing (local machine service events) or Remote Procedure Calls (remote administration service events).

4 In the Options window, individual events are listed. Click the checkbox next to an event to enable tracing of that event. To disable tracing, clear the checkbox by clicking it again.

5 After selecting the appropriate options, you have the following choices:

- Click Apply to save changes for the tab without closing the dialog box.
- Click OK to save the new settings and close the dialog box.
- Click Cancel to close the dialog box without saving any changes.

DISKXTENDER ADMINISTRATIVE TOOLS

DX provides a number of ways to perform diagnostics on the DX system. Comprehensive error messaging is built in, so every time an error condition occurs, a message with information about the condition causing the error appears. DX contains an error lookup feature that allows you to quickly translate the error codes provided in DX messages. In addition, reports can be created on the Windows Registry and the media services configured to your DX system to help you monitor DX status.

In addition to diagnostic capabilities, DX provides an administrative utility to help you repair the DX computer in the event of system failure.

Error Lookup

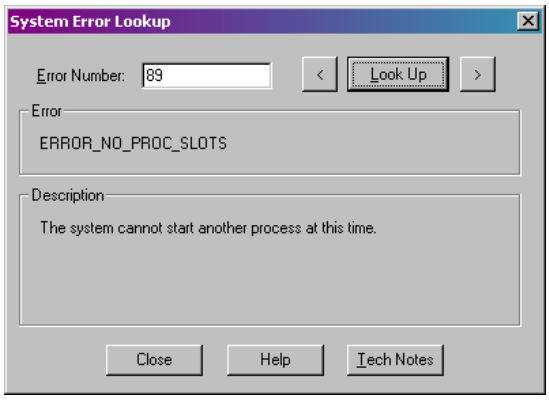
Each DX error is displayed as an error number. The DX error lookup feature allows you to obtain additional information about the error, including the error name and description.

To look up an error:

1 From the Help drop-down menu in the Administrator's window, select Error Glossary. The System Error Lookup dialog box appears.

2 Enter the error number in the Error Number text box and click Look Up.

Figure 101: System Error Lookup Dialog Box



3 The error string (if applicable) and its description are displayed in the dialog box.

4 Click the forward or backward arrows to scroll through the list of system errors. Click Help to access context-sensitive help for the error glossary. Click Tech Notes to launch the Xtender Solutions Knowledge Base.

5 Click Close to exit the dialog box.

CHAPTER FIVE

REPORTS

The DX reporting feature is a useful tool for tracking system statistics. Using the Report Wizard, you can create various reports of system activities, including extended drive information, media information, media services, and DISKXTENDER settings in the Windows NT/2000 registry.

You can create reports in DX and create custom layouts for your reports. Custom layouts are particularly useful because they can be saved and reused every time you run a report. For instructions, see *Reports Layout Editor* on page 154.

The DISKXTENDER reporting feature is a useful tool for tracking system statistics. DX gives you six different types of reports, each of which are detailed in this chapter.

Since DX is designed to allow you to manage multiple registered DX computers from a single Administrator interface, you can run any one of the available reports on multiple computers and multiple extended drives. You can also select to run more than one report at a time, allowing you to view several different aspects or details about several different registered DX computers/extended drives, in one consolidated report.

The available DX Reports are as follows:

- Extended Drive Information – detailed information about the selected extended drive(s). See *Extended Drive Information Report* on page 130.
- Media – detailed information on selected pieces of media. See *Media Report* on page 133.
- Media Files – generates a report based on the information compiled using a File Report media task. See *Media Files Reports* on page 138
- Media Services – detailed information about the media services configured for the selected DX computer(s). See *Media Services Report* on page 142.

- Media Tasks – lists all pending media tasks for selected media. See *Media Tasks Report* on page 145.
- Product Registry Information – lists all of the DX information contained in the windows registry for the selected DX computers. See *Product Registry Information Report* on page 151.

All of the reports available through DX are run using the Report Generator found in the Tools menu of the Administrator. The Report Generator is a wizard function that leads you through the step-by-step process of creating and customizing your reports.

CREATING REPORTS - REPORT WIZARD

The Report Generator wizard allows you to create various reports of system activities on one or more registered DX computers, including information about each extended drive and its components, media, and media task information. It also allows you to select to run more than one report at a time, allowing you to view several different aspects, or details about several different registered DX computers/extended drives, in one consolidated report.

NOTE ✍

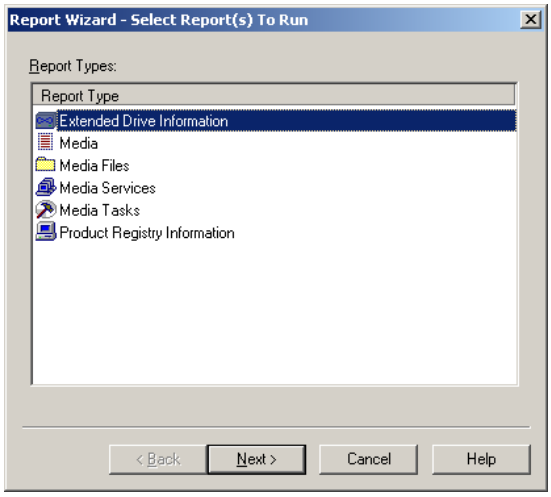
DX allows you to run multiple reports at once. If you choose to do this, the appropriate report wizard pages for each report will be merged to form one wizard that will lead you through the report generation process.

Once a report has been generated, it appears on your screen in RtfPad. RtfPad allows you to save, print or send the report via email. For instructions, see *Saving, Printing and Mailing Reports* on page 153.

To open the report wizard:

1 From Tools menu, select Report Generator. The Report Wizard opens and the Select Report(s) To Run Page appears.

Figure 102: Report Wizard



The Select Report(s) To Run page lists all available DISKXTENDER reports. A description of the report appears as a pop-up text box when you rest the mouse pointer on any report option.

2 Select the appropriate report type(s). You can use a standard Windows <SHIFT> or <CTRL> technique to select more than one type of report.

3 Click Next. The next report wizard page for the chosen report type appears. Select Cancel to abort the procedure.

Specific information about creating each type of report is provided in the sections below.

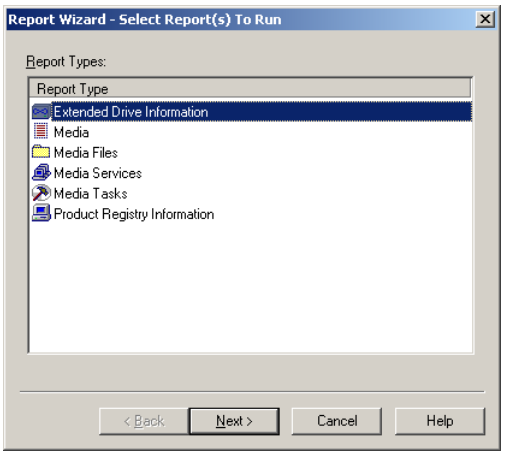
Extended Drive Information Report

The Extended Drive Information Report displays information about selected extended drive(s). This includes properties and assigned media. Full reports also display scan statistics, the scan schedule, and log configuration.

To create an extended drive report:

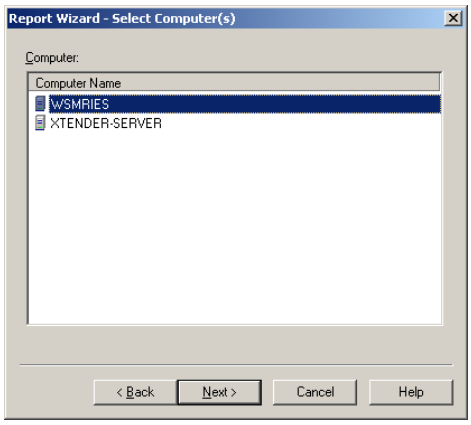
1 From the Select Report(s) To Run page, select the Extended Drive Information option.

Figure 103: Select Report(s) To Run Page



2 Click Next. The Select Computer(s) page appears.

Figure 104: Report Wizard Select Computer(s) Page

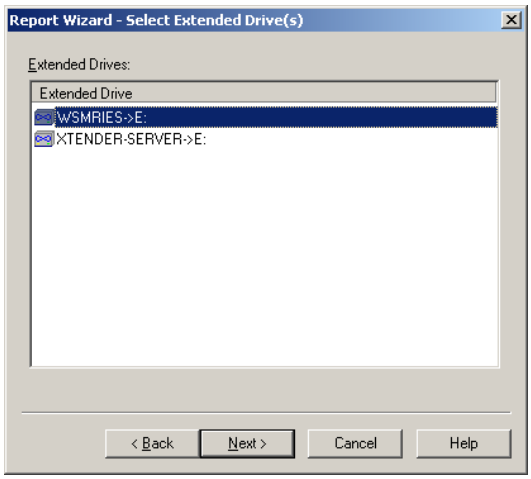


The Select Computer(s) page lists all registered and connected DX computers.

3 In the Select Computer(s) page, select the DX computers for which you want to generate a report.

4 Click Next. The Select Extended Drive(s) page appears.

Figure 105: Report Wizard Select Extended Drive(s) Page

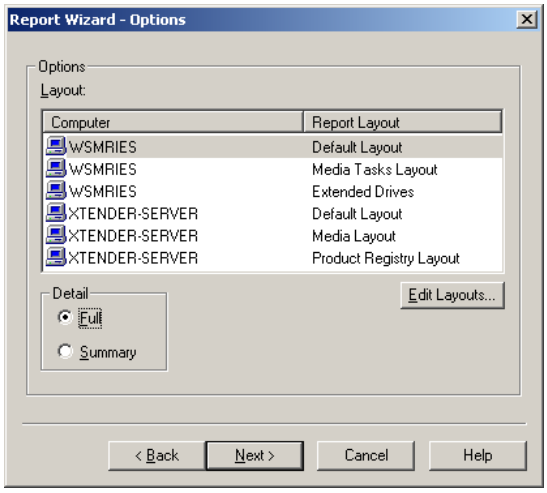


The Select Extended Drive(s) page lists all available extended drives for the selected DX computers.

5 In the Select Extended Drive(s) page, select the Extended Drive(s) for which you want to generate a report.

6 Click Next. The Options page appears.

Figure 106: Extended Drive Information Report Options Page



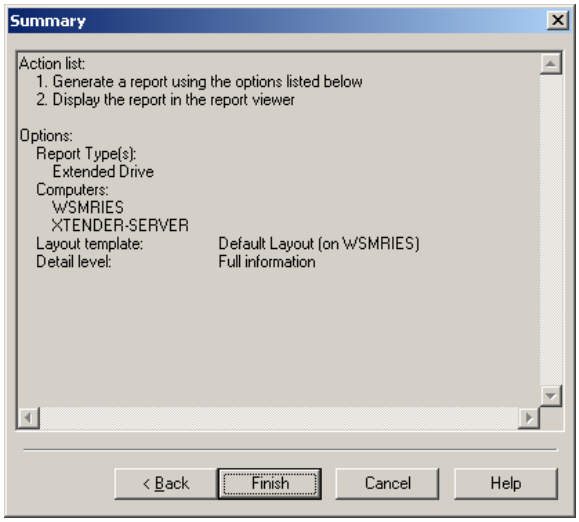
The options page allows you to select the level of detail for the report (if applicable) and select the layout for the report being generated. If you want to edit a selected layout, click Edit Layouts. For detailed information on using the Reports Layout Editor, see *Reports Layout Editor* on page 154.

7 If there is more than one computer/layout listed, select the one you want to use for your report.

8 Select the amount of detail you want on the report: Full or Summary.

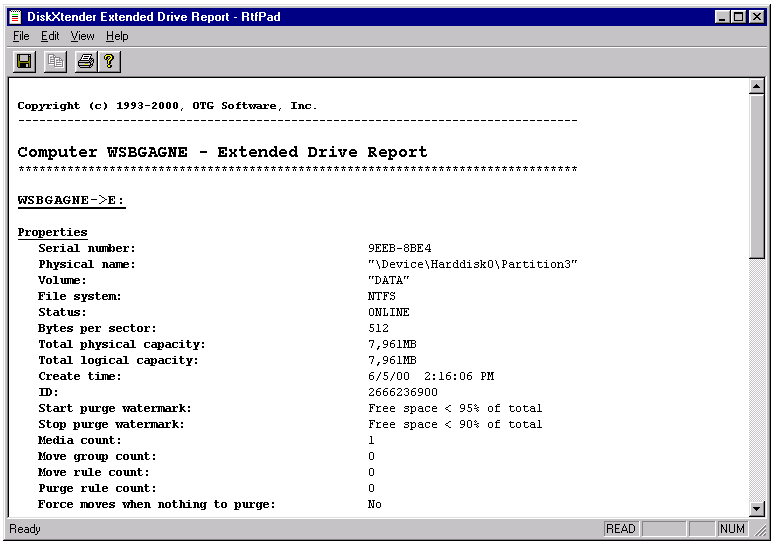
9 Click Next. The Summary page appears.

Figure 107: Extended Drive Information Report Summary Page



10 Review the information in the Summary page. If the information in the summary is correct, click Finish to create and display the report. The report appears in RtfPad.

Figure 108: Extended Drive Information Report



As with any information appearing in RtfPad, you may choose to save, print or email the report using the appropriate commands in the File menu of the RtfPad window. For details on these functions, see *Saving, Printing and Mailing Reports* on page 153.

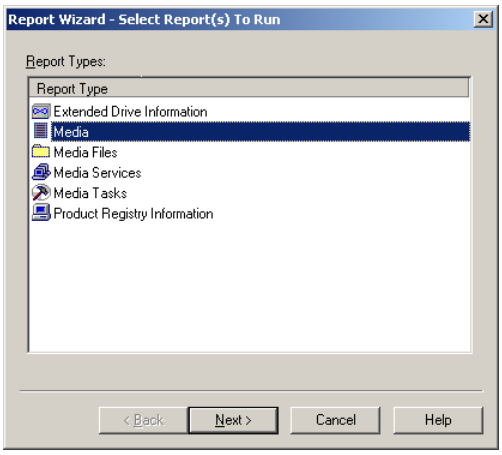
Media Report

The Media Report includes information on the selected media, either as a summarized list or a detailed description of properties. Information displayed in the detailed report includes location info, total/free space, and read/write/mount statistics.

To run a media report:

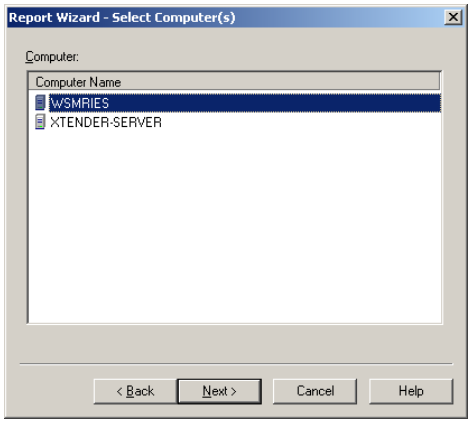
1 From the Select Report(s) To Run page, select the Media option.

Figure 109: Select Report(s) To Run Page



2 Click Next. The Select Computer(s) page appears.

Figure 110: Report Wizard Select Computer(s) Page

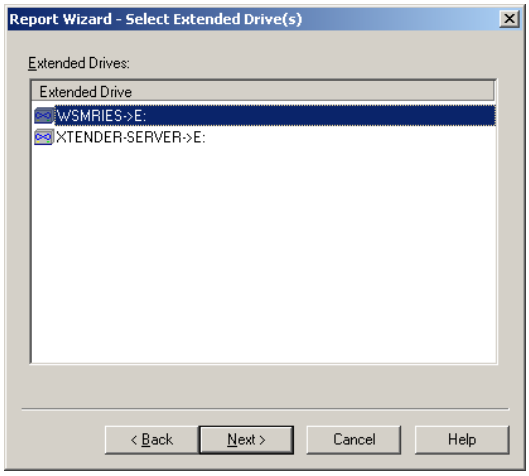


The Select Computer(s) page lists all registered and connected DX computers.

3 In the Select Computer(s) page, select the DX computers for which you want to generate a report.

4 Click Next. The Select Extended Drive(s) page appears.

Figure 111: Report Wizard Select Extended Drive(s) Page

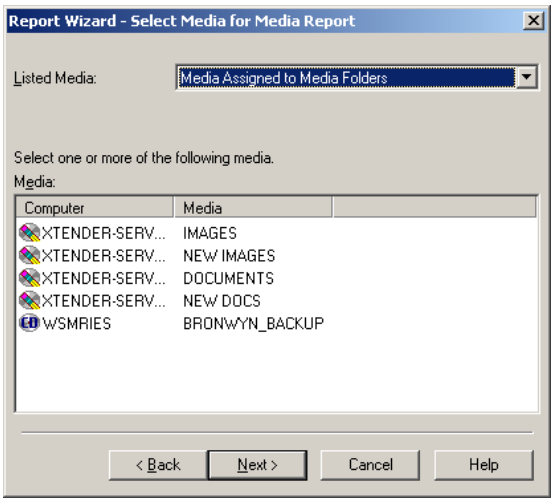


The Select Extended Drive(s) page lists all available extended drives for the selected DX computers.

5 In the Select Extended Drive(s) page, select the Extended Drive(s) for which you want to generate a report.

6 Click Next. The Select Media for Media Report page appears.

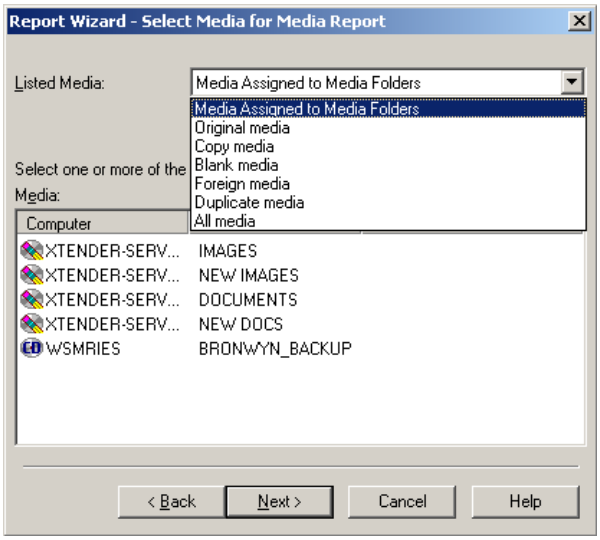
Figure 112: Select Media for Media Report Page



The Select Media for Media Report page lists all available media for which you can generate a report. It lists the DX computer where the media is located and the name of the media.

7 Select one of the media types from the Listed Media drop-down list. Selecting a specific media type from the drop-down list will narrow the number of media listed in the Media list, and may make it easier to find and choose media for the report.

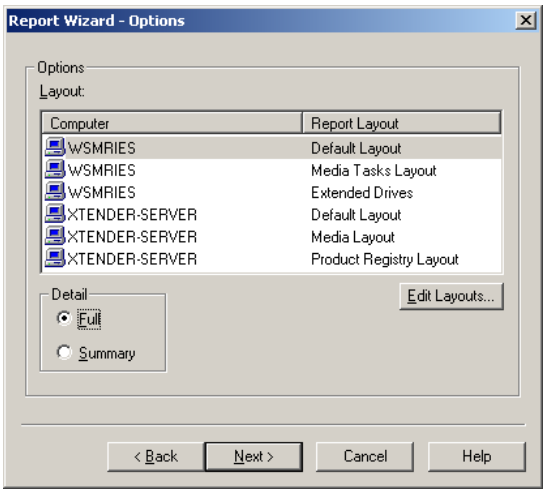
Figure 113: Listed Media Drop-Down List



8 Select the media for which you want to generate the report. You may select multiple pieces of media using the standard Windows <SHIFT> and <CTRL> technique.

9 Click Next. The Options page appears.

Figure 114: Media Report Options Page



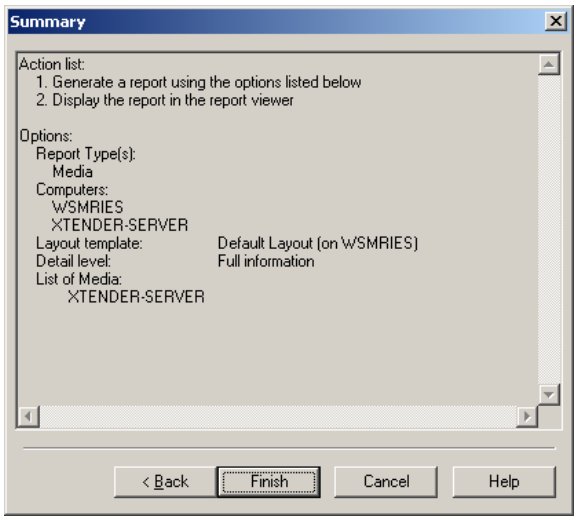
The options page allows you to select the level of detail for the report (if applicable) and select the layout for the report being generated. If you want to edit a selected layout, click Edit Layouts. For detailed information on using the Reports Layout Editor, see *Reports Layout Editor* on page 154.

10 If there is more than one computer/layout listed, select the one you want to use for your report.

11 Select the amount of detail you want on the report: Full or Summary.

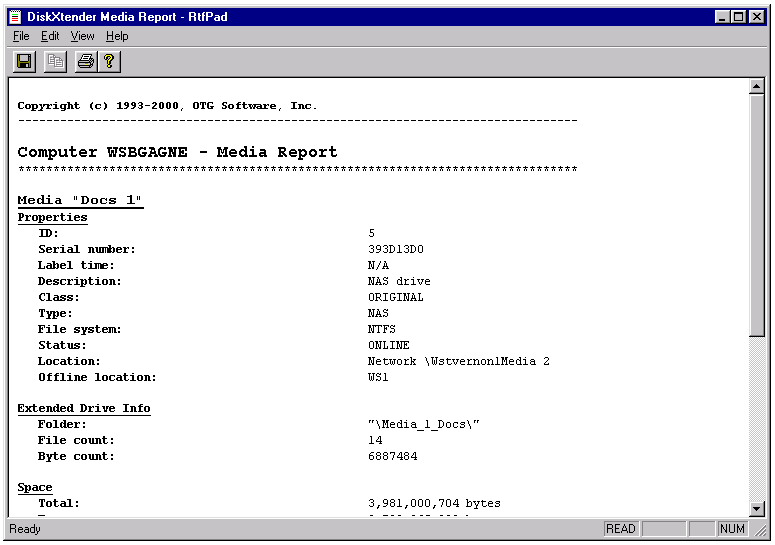
12 Click Next. The Summary page appears.

Figure 115: Media Report Summary Page



13 Review the information in the Summary page. If the information in the summary is correct, click Finish to create and display the report. The report appears in RtfPad.

Figure 116: Media Report



As with any information appearing in RtfPad, you may choose to save, print or email the report using the appropriate commands in the File menu of the RtfPad window. For details on these functions, see *Saving, Printing and Mailing Reports* on page 153.

Media Files Reports

A Media Files Report displays a formatted report based on the list of files generated by processing a File Report task on one or more pieces of media.

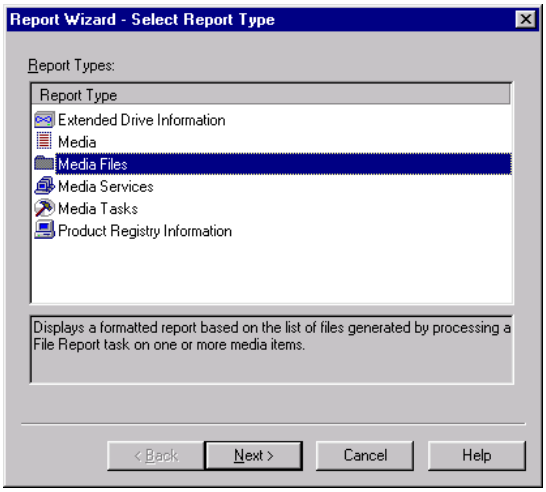
NOTE

You cannot run a Media Files report unless you have previously processed a File Report task for at least one piece of media on the selected extended drive(s).

To run a media files report:

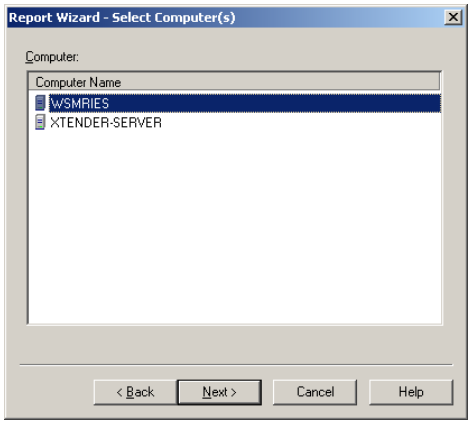
1 From the Select Report(s) To Run page, select the Media Files option.

Figure 117: Select Report(s) To Run Page



2 Click Next. The Select Computer(s) page appears.

Figure 118: Report Wizard Select Computer(s) Page

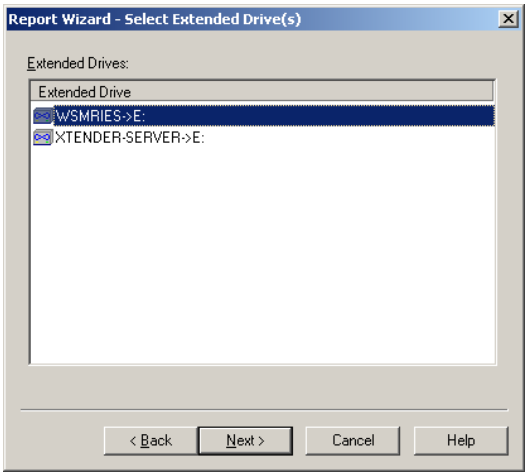


The Select Computer(s) page lists all registered and connected DX computers.

3 In the Select Computer(s) page, select the DX computers for which you want to generate a report.

4 Click Next. The Select Extended Drive(s) page appears.

Figure 119: Report Wizard Select Extended Drive(s) Page

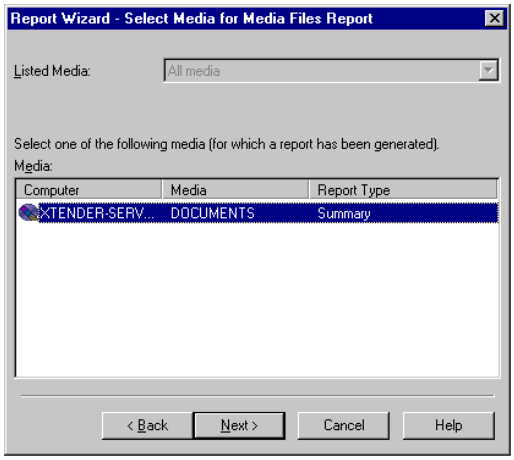


The Select Extended Drive(s) page lists all available extended drives for the selected DX computers.

5 In the Select Extended Drive(s) page, select the Extended Drives for which you want to generate a report.

6 Click Next. The Select Media for Media Files Report page appears.

Figure 120: Select Media for Media Files Report Page

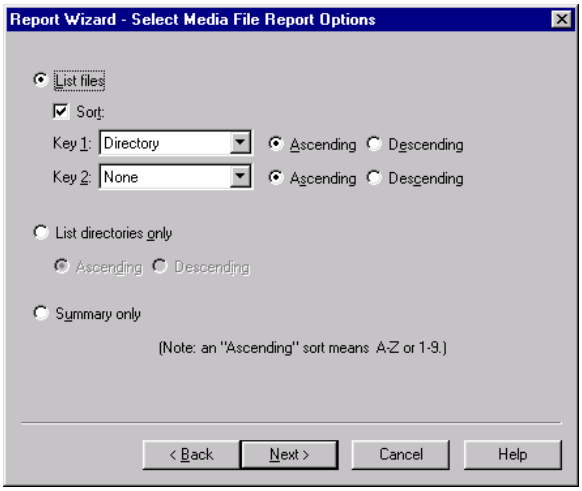


The Select Media for Media Files Report page lists all media for which the File Report media task has previously been run. This window also notes whether the Summary or Complete option was selected when the media task was configured.

7 Select one of the listed media for which you want to generate the report.

8 Click Next. The Select Media File Report Options page appears.

Figure 121: Select Media File Report Options Page



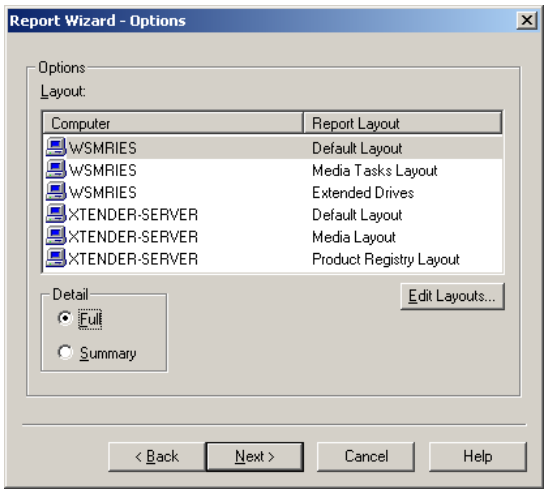
The selection options available in this page are as follows:

Table 20: Report Wizard: Select Media File Report Options Page

ITEM:	DESCRIPTION:
List Files	Select this option to list all files on the media.
Sort	Click a check in the checkbox to configure a particular sort order for the files.
Key 1	Select the first factor to sort by from the Key 1 drop-down list box and select Ascending or Descending sort order.
Key 2	Select the next factor to sort by from the Key 2 drop-down list box and select Ascending or Descending sort order.
List directories only	Select this option to list only the directories on the media and select Ascending or Descending sort order.
Summary only	Select this option to list only summary information on the piece of media. This is the only option available if the media you selected for the report only had the Summary option configured for the File Report media task.

9 Select the appropriate report option(s) and click Next. The Options page appears.

Figure 122: Media File Report Options Page



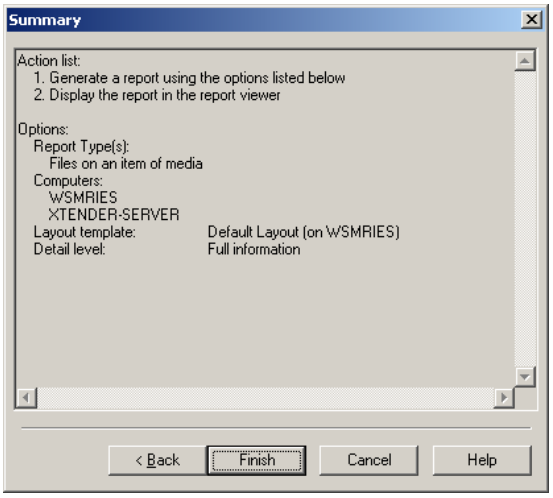
The options page allows you to select the level of detail for the report (if applicable) and select the layout for the report being generated. If you want to edit a selected layout, click Edit Layouts. For detailed information on using the Reports Layout Editor, see *Reports Layout Editor* on page 154.

10 If there is more than one computer/layout listed, select the one you want to use for your report.

11 Select the amount of detail you want on the report: Full or Summary.

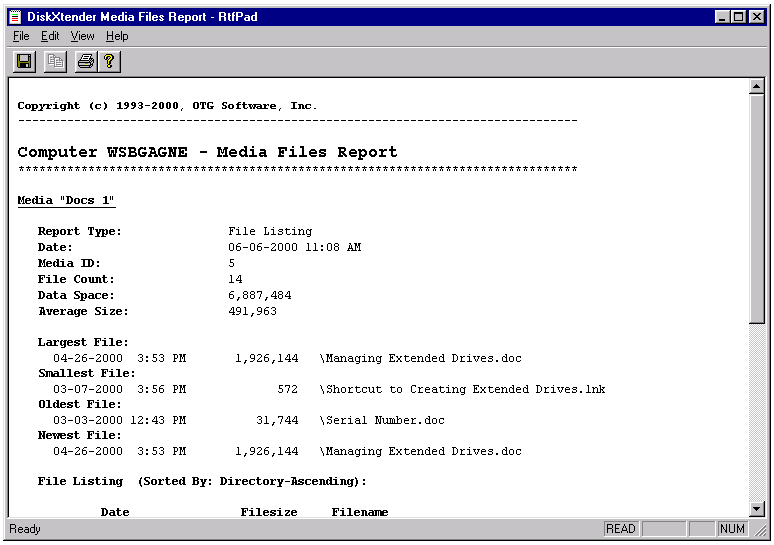
12 Click Next. The Summary page appears.

Figure 123: Media File Report Summary Page



13 Review the information in the Summary page. If the information in the summary is correct, click Finish to create and display the report. The report appears in RtfPad.

Figure 124: Media Files Report



As with any information appearing in RtfPad, you may choose to save, print or email the report using the appropriate commands in the File menu of the RtfPad window. For details on these functions, see *Saving, Printing and Mailing Reports* on page 153.

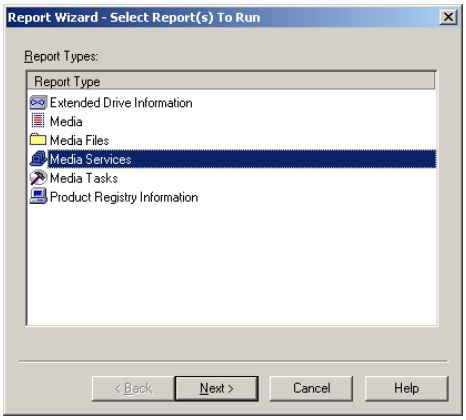
Media Services Report

The Media Services Report provides information on the media services configured on the selected DX computer(s). You may choose to run the report either as a summarized list or a detailed description of properties. Information displayed in the detailed report includes location information, total/free space, and read/write/mount statistics.

To run a media services report:

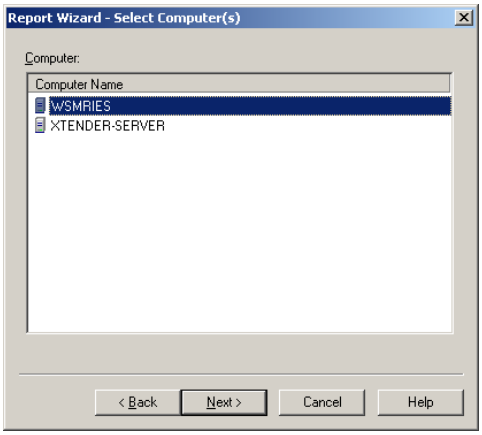
1 In the Report Wizard, from the Select Report(s) To Run page, select the Media Services option.

Figure 125: Select Report(s) To Run Page



2 Click Next. The Select Computer(s) page appears.

Figure 126: Report Wizard Select Computer(s) Page

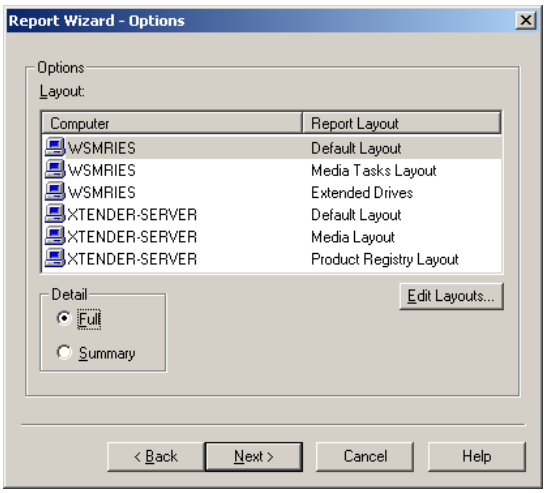


The Select Computer(s) page lists all registered and connected DX computers.

3 In the Select Computer(s) page, select the DX computer(s) for which you want to generate a report.

4 Click Next. The Options page appears.

Figure 127: Media Services Report Options Page



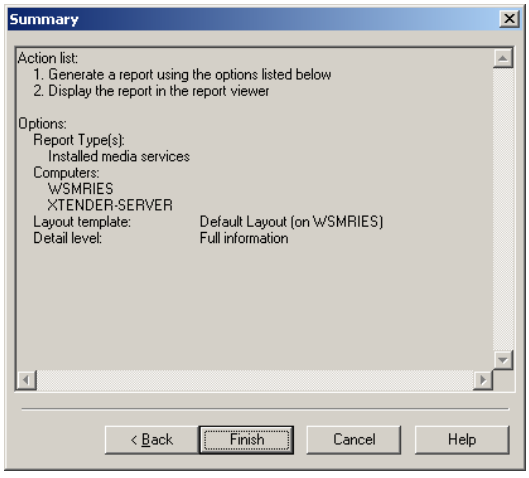
The options page allows you to select the level of detail for the report (if applicable) and select the layout for the report being generated. If you want to edit a selected layout, click Edit Layouts. For detailed information on using the Reports Layout Editor, see *Reports Layout Editor* on page 154.

5 If there is more than one computer/layout listed, select the one you want to use for your report.

6 Select the amount of detail you want on the report: Full or Summary.

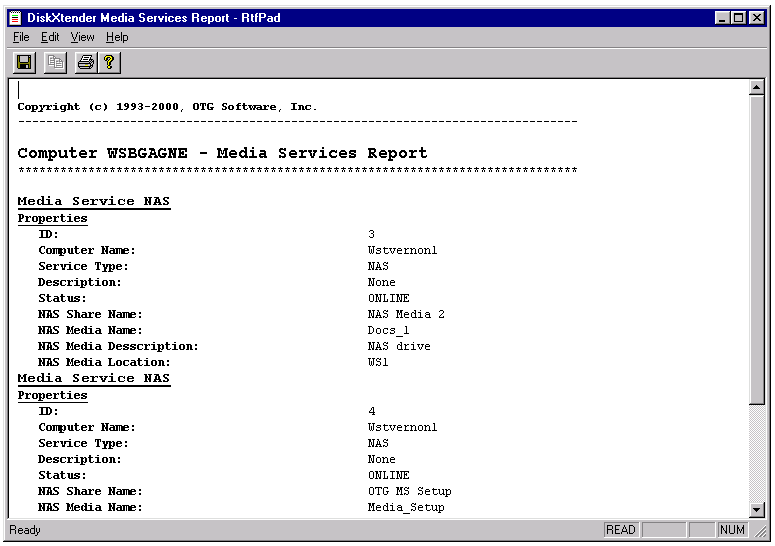
7 Click Next. The Summary page appears.

Figure 128: Media Services Report Summary Page



8 Review the information in the Summary page. If the information in the summary is correct, click Finish to create and display the report. The report appears in RtfPad.

Figure 129: Media Services Report Window



As with any information appearing in RtfPad, you may choose to save, print or email the report using the appropriate commands in the File menu of the RtfPad window. For details on these functions, see *Saving, Printing and Mailing Reports* on page 153.

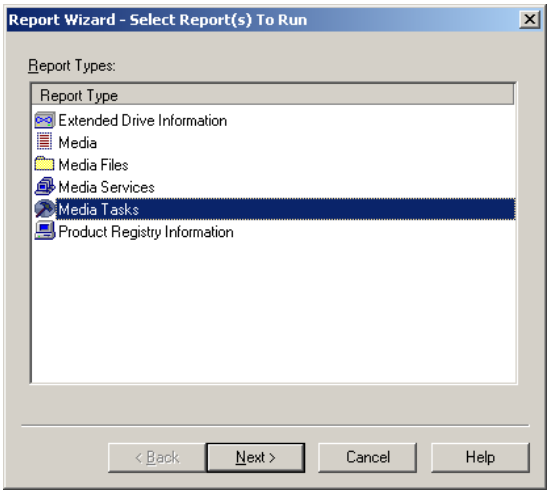
Media Tasks Report

The Media Tasks Report displays a list of media tasks that are pending, are in progress, or that have failed for selected media on the selected extended drive(s).

To run a media tasks report:

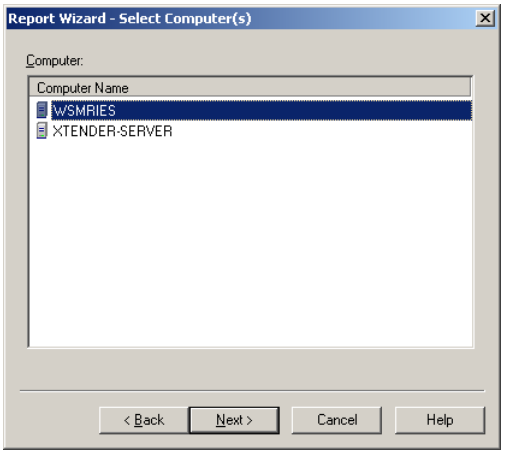
1 From the Select Report(s) To Run page, select the Media Tasks option.

Figure 130: Select Report(s) To Run Page



2 Click Next. The Select Computer(s) page appears.

Figure 131: Report Wizard Select Computer(s) Page

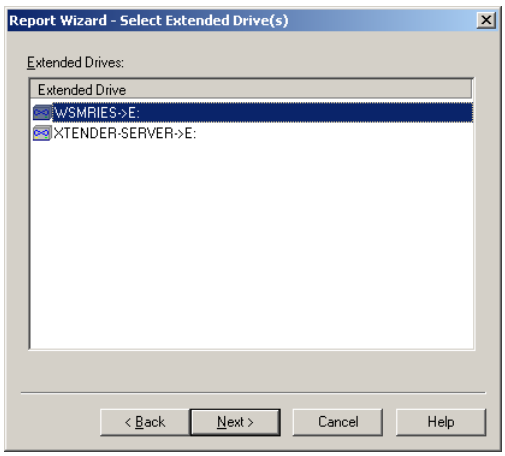


The Select Computer(s) page lists all registered and connected DX computers.

3 In the Select Computer(s) page, select the DX computer(s) for which you want to generate a report.

4 Click Next. The Select Extended Drive(s) page appears.

Figure 132: Report Wizard Select Extended Drive(s) Page

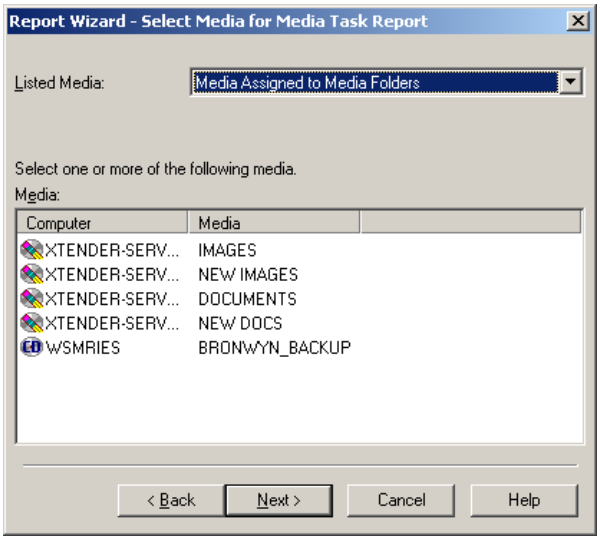


The Select Extended Drive(s) page lists all available extended drives for the selected DX computers.

5 In the Select Extended Drive(s) page, select the Extended Drive(s) for which you want to generate a report.

6 Click Next. The Select Media for Media Task Report page appears.

Figure 133: Select Media For Media Task Report Page

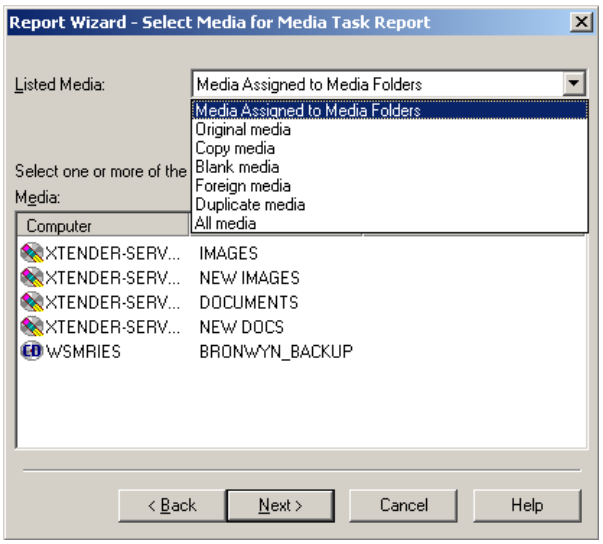


The Select Media for Media Task Report page lists all available media for which you can generate a report. It lists the DX computer where the media is located and the name of the media.

7 Select one of the media types from the Listed Media drop-down list. Selecting a specific media type from the drop-down list will narrow the number of media

listed in the media list, and may make it easier to find and choose media for the report.

Figure 134: Listed Media Drop-Down List



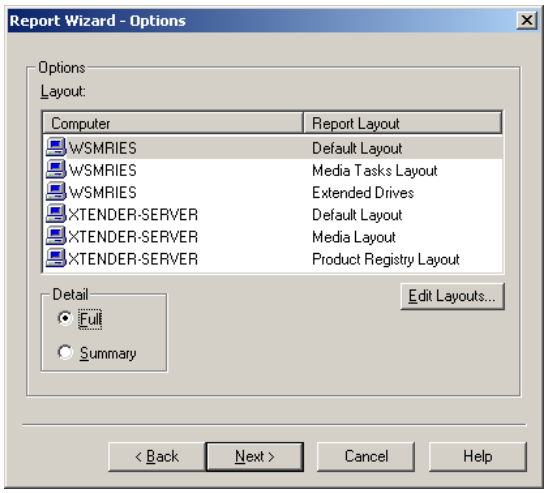
8 Select the media for which you want to generate the report. You may select multiple pieces of media using the standard Windows <SHIFT> or <CTRL> technique.

NOTE

Be sure to select media that currently has pending media tasks assigned to it. If you select media with no pending media tasks, the report will still be generated but will contain no information for that media.

9 Click Next. The Options page appears.

Figure 135: Media Tasks Report Layout Options Page



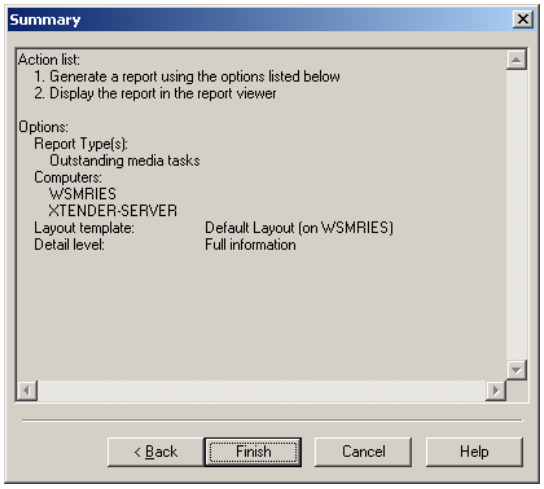
The options page allows you to select the level of detail for the report (if applicable) and select the layout for the report being generated. If you want to edit a selected layout, click Edit Layouts. For detailed information on using the Reports Layout Editor, see *Reports Layout Editor* on page 154.

10 If there is more than one computer/layout listed, select the one you want to use for your report.

11 Select the amount of detail you want on the report: Full or Summary.

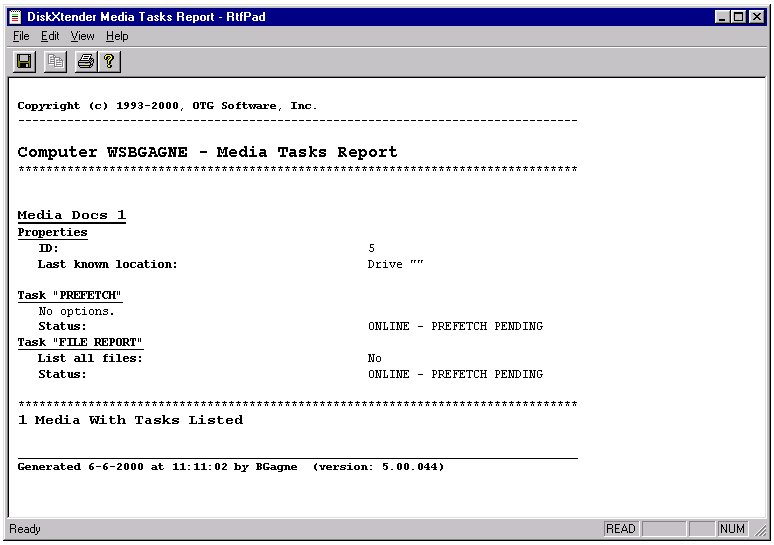
12 Click Next. The Summary page appears.

Figure 136: Media Tasks Report Summary Page



13 Review the information in the summary page. If the information in the Summary is correct, click Finish to create and display the report. The report appears in RtfPad.

Figure 137: Media Tasks Report



As with any information appearing in RtfPad, you may choose to save, print or email the report using the appropriate commands in the File menu of the RtfPad window. For details on these functions, see *Saving, Printing and Mailing Reports* on page 153.

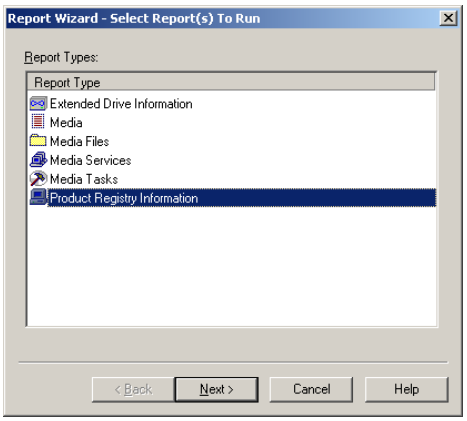
Product Registry Information Report

The Product Registry Information report provides a complete listing of all information contained in the Windows registry about the DISKXTENDER service on the selected DX computer(s). The report information includes a listing of all registry keys (and associated values) used by DISKXTENDER.

To run a product registry information report:

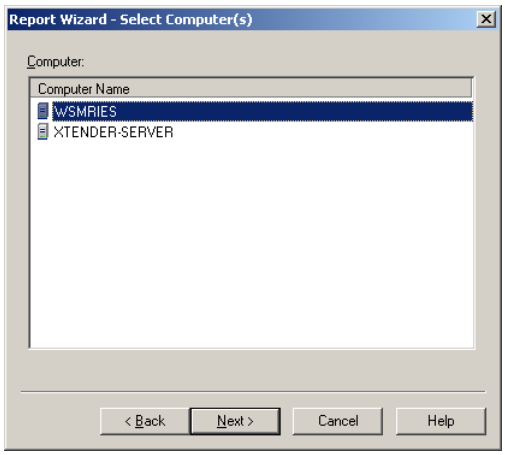
1 In the Report Wizard, from the Select Report(s) To Run page, select the Product Registry Information option.

Figure 138: Select Report(s) To Run Page



2 Click Next. The Select Computer(s) page appears.

Figure 139: Report Wizard Select Computer(s) Page

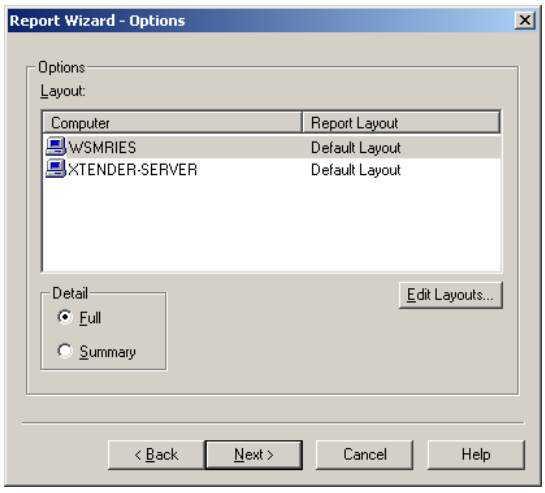


The Select Computer(s) page lists all registered and connected DX computers.

3 In the Select Computer(s) page, select the DX computers for which you want to generate a report.

4 Click Next. The Options page appears.

Figure 140: Product Registry Information Report Options Page



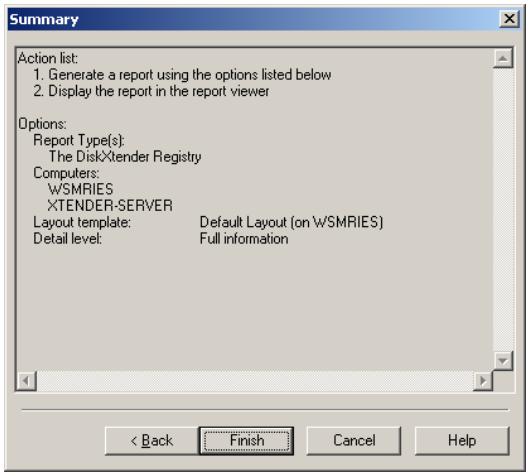
The options page allows you to select the level of detail for the report (if applicable) and select the layout for the report being generated. If you want to edit a selected layout, click Edit Layouts. For detailed information on using the Reports Layout Editor, see *Reports Layout Editor* on page 154.

5 If there is more than one computer/layout listed, select the one you want to use for your report.

6 Select the amount of detail you want on the report: Full or Summary.

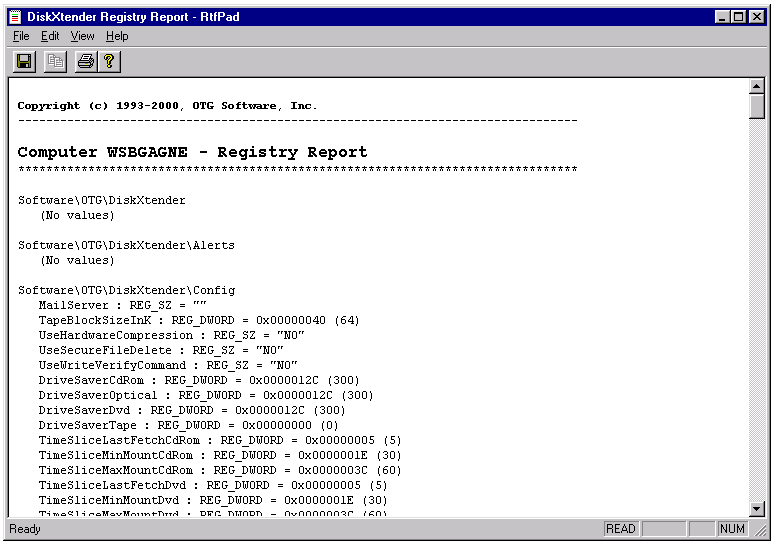
7 Click Next. The Summary page appears.

Figure 141: Product Registry Information Report Summary Page



8 Review the information in the Summary page. If the information in the summary is correct, click Finish to create and display the report. The report appears in RtfPad.

Figure 142: Product Registry Information Report Window

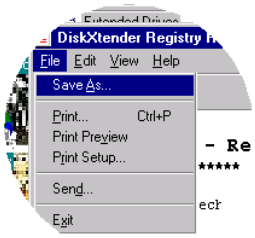


As with any information appearing in RtfPad, you may choose to save, print or email the report using the appropriate commands in the File menu of the RtfPad window. For details on these functions, see the *Saving, Printing and Mailing Reports* section below.

Saving, Printing and Mailing Reports

Once generated and displayed in the DX Report window, a report can be saved or printed for future reference using RtfPad commands. In addition, you can send a report to someone by email.

Figure 143: RtfPad File Menu



By default, once the report (RtfPad window) is closed, the information is lost. While the DX report window is open, you can perform the following functions using the report window File menu:

- Use Save As to save the report.
- Use Send to email the report.
- Use Print and Print Setup to print the report in the appropriate format.
- Use Print Preview to preview the report before printing.

REPORTS LAYOUT EDITOR

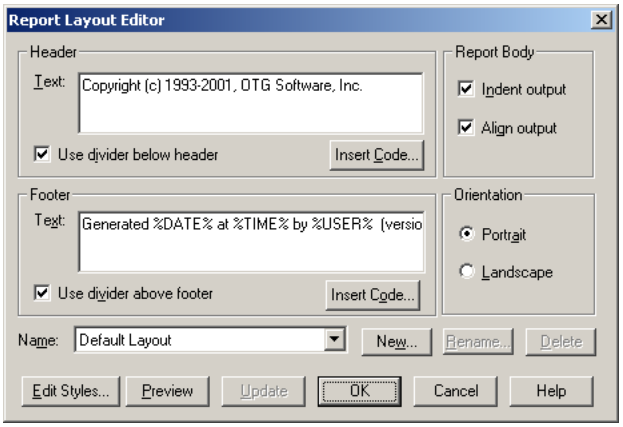
The DX Report Layout Editor allows you to define font, font sizes, tab stops, and header and footer contents. The styles and layouts can be set and saved as report defaults; however, you can override these options whenever necessary.

DX also allows you to create and save new layouts on different DX computers. These layouts are available for use any time a report is run for that DX computer, regardless of whether the report is being run from that DX computer itself, or from a remote DX computer. When you generate a report using the Report Wizard for a remote DX computer that has saved layouts, those layouts will appear in the Report Wizard Options page.

To open the reports layout editor:

➲ From the Tools menu on the main menu bar, select Report Layouts. The Report Layout Editor dialog box appears.

Figure 144: Report Layout Editor



The following procedures outline how to create, edit, view, and delete custom report layouts. Once created, a report layout is available for use with all DISKXTENDER reports.

To assist you with creating and editing your custom report layouts, the Report Layout Editor window contains the following options:

- Use the drop-down list for the Name text box to select an existing layout to view, edit or delete.
- Click Preview to preview the report layout listed in the Name text box.
- Click Update to save changes to a report layout without exiting the Report Layout Editor.
- Click OK to save changes to a report layout and exit the Report Layout Editor.
- Click Cancel to exit the Report Layout Editor without saving changes.

Each of the following procedures begins from the Report Layout Editor dialog box shown in Figure 144 above.

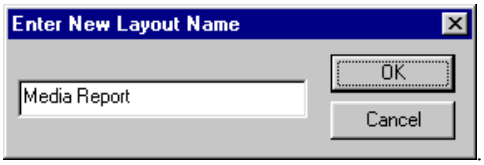
Creating a New Layout

Each layout should be identified by a specific, descriptive name, in order to make the layout easy to identify for use with your reports.

To create a new layout:

1 Click New. The Enter New Layout Name dialog box appears.

Figure 145: Enter New Layout Name Dialog Box



2 Type a name in the text box and click OK. A new layout with that name and the default layout settings is created.

Changing Headers and Footers for Layouts

The Report Layout Editor dialog box contains two text boxes entitled Text, one for the header and one for the footer. These boxes allow you to enter specific text for the headers and footers. DX also allows you to insert dynamic codes, which retrieve specific values and writes them directly into the header or footer with the specified text. Placing these dynamic codes in custom headers or footers, and thereby on the reports generated with a custom layout, can help you identify, file and retrieve reports later.

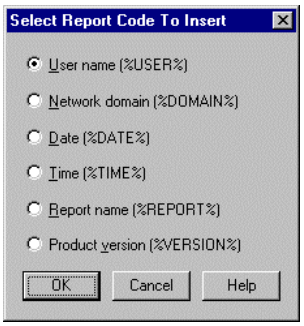
To change a header or footer for a layout:

1 Click in the appropriate text box and type or edit the desired text.

2 If you want to insert a dynamic code, place the cursor where you want the code value to appear.

3 Click Insert Code under the appropriate text box. The Select Report Code to Insert dialog box appears.

Figure 146: Select Report Code To Insert



4 Select the code that you want to insert. You have six options:

Table 21: Select Report Code To Insert Options

OPTION:	DESCRIPTION:
User Name	Inserts the name of the currently logged in DX user.
Network Domain	Inserts the Domain on which DX is running.
Date	Inserts the system date the report is generated.
Time	Inserts the system time the report is generated.
Report Name	Inserts the name given to the report when generated.
Product Version	Inserts the version of DISKXTENDER being used to generate the report.

5 Click OK to insert the code and return to the Report Layout Editor dialog box.

NOTE

Spaces are not automatically inserted around the code. If you want spaces to appear before or after the value the code inserts, place spaces in the text box before and after the code as appropriate.

Editing Layout Paragraph Styles

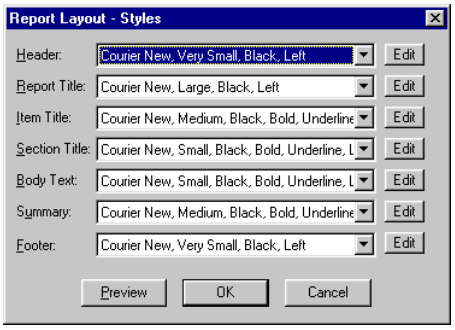
The Report Layout Editor allows you to customize the look of your reports by giving you font, size, color, and other stylistic options for each type of paragraph used in generating report output. This makes it easier to call attention to specific information in the reports and may make your reports easier to read and interpret.

To edit styles for a layout:

1 Make sure the layout you want to modify appears in the Name text box.

2 Click Edit Styles. The Styles dialog box appears.

Figure 147: Report Layout – Styles Dialog Box



Each paragraph type has a drop-down list containing all available style profiles.

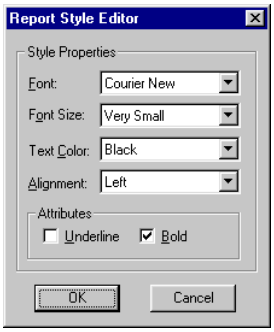
3 For each paragraph style profile you have two options (each paragraph style must be edited separately):

- Select a profile from the drop-down list.
- Click Edit next to the paragraph profile text box to open the Report Style Editor.

If you are selecting profiles from the drop-down lists, skip the next steps and continue with step 7 below.

If you click Edit next to a style text box, the Report Style Editor dialog box appears.

Figure 148: Paragraph Style Editor Dialog Box



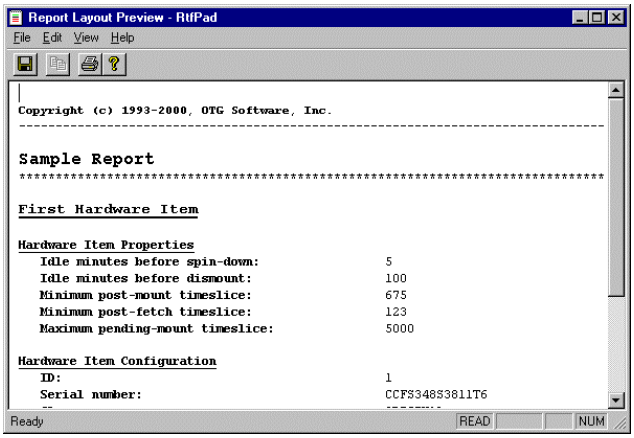
4 Select the desired characteristics for Font, Font Size, Text Color, and Alignment from the appropriate drop-down lists.

5 Enable or disable the Underline and Bold characteristics for the paragraph by clicking in the checkbox next to each option.

6 Click OK to save your changes to the paragraph style and return to the Report Layout-Styles dialog box. Your new style properties appear in the paragraph profile text box.

7 Once you have configured all necessary styles, you can preview the report layout by selecting the Preview button on the Report Layout-Styles dialog box. A Report Layout Preview appears.

Figure 149: Report Preview – Sample Report

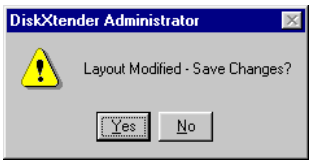


8 Once you are satisfied with your layout styles, click OK to save changes and return to the Report Layout Editor dialog box.

Switching from one layout to another

If you have created or made edits to a report layout, and you want to create or edit another one, you should click Update to save your changes. If you select another layout from the Name drop-down list box or click New without clicking the Update button, DX will prompt you to save unsaved changes to the current layout.

Figure 150: Save Changes Verification Message



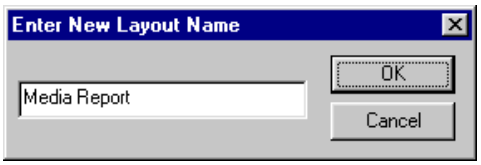
Click Yes to save changes or No to discard changes made since the last time you clicked Update.

To rename a layout:

1 Make sure that the correct layout appears in the Name text box.

2 Click Rename. The Enter New Layout Name dialog box appears.

Figure 151: Enter New Layout Name Dialog Box



3 Type the new name in the text box and click OK. The new name appears in the Name text box in the Report Layout Editor dialog box.

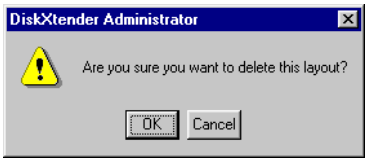
To delete a layout:

1 Make sure the correct layout appears in the Name text box.

2 Click Delete.

3 DX will then ask you to confirm that the layout should be deleted. Click OK to permanently delete the layout or Cancel to stop the delete operation.

Figure 152: Verification Message



CHAPTER SIX

BACKUP AND RECOVERY

Because constant and reliable access to your data is one of the most critical parts of your system, we recommend that you have a comprehensive disaster recovery plan in place in the event of system problems or an entire system shutdown, DISKXTENDER contains several functions that can make creation and/or maintenance of your recovery plan easier. DX also contains registry and data backup utilities that can help you restore DX files and registry information, even when the problem is a minor one.

The functions available in DISKXTENDER to help you maintain continuous access to DX managed data include:

- DISKXTENDER'S ability to run in a clustered environment, allowing for fail-over and fail-back of DX processes between clustered servers. See *Clustering* on page 162.
- The Extended Drive Backup utility, allowing for complete backups of extended drive data, and complete restoration of that data when needed. See *Extended Drive Backup Utility* on page 163 and *Restoring Extended Drive from Backup* on page 184.
- The Repair Disk utility, allowing for creation of master and backup copies of DX computer registry entries, and restoration of the registry when needed. See *Repair Disk Utility* on page 174 and *Restoring DX Registry Settings* on page 179.
- The Change Extended Drive Serial Number utility – allowing for reassignment of extended drive serial numbers, if required, after an extended drive a drive is reformatted. See *Change Extended Drive Serial Number Utility* on page 182.

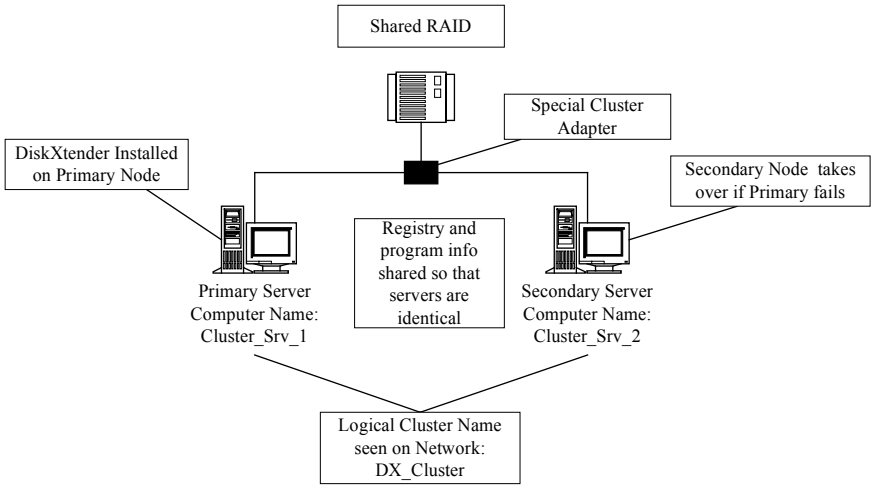
This chapter discusses the issues associated with each of these functions, details what each function or utility does, and where applicable, provides step-by-step procedures for both creating recovery files and restoring those files (and your DX system) when necessary.

CLUSTERING

Clustering is the process of connecting two or more computers together in such a way that they behave like a single computer, and so that they share a single storage device. The server computers that are part of the cluster are called *nodes* or *systems*.

A typical clustered environment consists of two servers (a Primary node and a Secondary node) and a RAID array. The figure below shows a basic clustered environment.

Figure 153: Example of Clustered Architecture



Because the cluster is designed to function as a single computer, users and programs do not access individual nodes when connecting to the cluster. They instead access a *logical cluster name*. The logical cluster name represents the "single computer" that all of the individual components within the cluster have formed to create.

The Primary node constantly updates the Secondary node with registry information so it can intervene when needed. The Secondary node assumes the functions of the Primary node if the Primary ever goes off-line.

The ability of a cluster to transfer functions to a Secondary node when the Primary fails is called *fault tolerance*. The act of transferring functions to the Secondary nodes is called *fail-over*. If the Primary node fails or is paused for repairs, the processes will fail-over to the Secondary node. Because the Secondary node has the same configuration as the Primary node, the Secondary node can run cluster operations with little or no disruption of server activity.

When the Primary node comes back online, it is now available to take over the processing functions if/when necessary, and effectively becomes the Secondary node. In the event the *new* Primary node (which was the Secondary node before the fail-over) fails, the Cluster operations will return to the original Primary node. The act of transferring functions *back* to the original Primary node is called *fail-back.*

DISKXTENDER has the capability to run on a clustered environment. The administrator needs little interaction, as the installation procedure recognizes that the program is being installed on a cluster, and modifies the installation appropriately. The Windows operating system handles all other special cluster-related functions.

DX cluster installation is supported on a Windows NT Enterprise Edition or Windows 2000 Advanced Server Edition cluster server using Microsoft Cluster Server in active/passive mode.

If you are planning to run DISKXTENDER in a clustered environment, you must install the DX program either from a remote machine or directly on the Primary server (the server node currently in control). If installing from a remote machine, make sure to select the logical cluster name to add to the list of computers for install. If installing directly on the Primary server, be advised that the installation program can detect whether the computer is the current Primary server, and will fail if initiated on a machine other than the Primary server of the cluster. See the DX2000 Getting Started Guide for detailed instructions on installation.

In addition, you must to obtain a cluster-enabled DX license when licensing a cluster-installed copy of DX. Be sure to inform your sales representative when purchasing your DX license that you will be running DISKXTENDER in a clustered environment.

Remote administrators and DISKXTENDER clients will access the DX program by connecting to the logical cluster name via the network.

DX BACKUP FUNCTIONS

DISKXTENDER contains several utilities that allow you to effectively backup the most important aspects of your DX system, to include the files on your extended drive and the registry settings used by DX. This section provides information and procedures for setting up backup files and configurations in the event you ever need to restore your DX system after a disaster or catastrophic system failure.

EXTENDED DRIVE BACKUP UTILITY

Extended drive backups should be performed periodically in order to back up DISKXTENDER managed files and file tags. While you may be using a system backup program, these programs can often be limited when it comes to backing up all of the data necessary to restore your DISKXTENDER files in the event of a system problem or disaster. There are two basic limitations when using traditional backup solutions with extended drives: performance issues and incomplete backup sets. The extended drive backup feature provides an alternative solution for these problems.

Backup programs that are not “NTFS aware” suffer from performance problems when running with DISKXTENDER. These programs open files in a “normal mode” and cause file data to be fetched from remote storage. This can make backup impossible (due to time constraints) and can cause backup failures due to insufficient disk space resources.

Even backup solutions that are "NTFS aware" may not be suitable for DISKXTENDER because they do not backup (and restore) *all* NTFS data. A complete backup for an extended drive must include the following information:

- File names and metadata (for DX-managed files)
- File data (for non-DX managed files)
- File stream data
- Security information
- Extended attributes (additional metadata)

Since DISKXTENDER stores its file tracking data in NTFS extended attributes, this data is critical to any backup and restore strategy. Many backup programs do not backup and restore this data, making them ineffective as disaster recovery solutions for DISKXTENDER.

A DX extended drive backup set will contain all necessary data for disaster recovery of a DISKXTENDER extended drive. This feature provides a compact, high-speed, backup of any extended drive. Backup sets will contain different data depending on the type of file being backed up:

Table 22: Types of Data Backed up By DISKXTENDER

DISKXTENDER FILES:	NON-DISKXTENDER FILES:
File names and metadata	File names and metadata
File stream data	File stream data
Security information	Security information
Extended attributes	Extended attributes
	File data

Notice that extended drive backup sets *do not* include file data for DISKXTENDER managed files (files that DX has already moved to media). This data is permanently archived on remote storage media and can always be retrieved, and, therefore is not necessary in a standard backup. This optimization significantly reduces the size of backup data sets and the time it takes to backup large volumes.

Once DISKXTENDER has created a backup set, this data must be archived (like any other backup data) for disaster recovery. Because the DISKXTENDER backup set contains all necessary information to restore an extended drive, any backup software can be used to archive DX backup sets. Limitations of backup software (i.e., not backing up extended attributes, etc.) will not be an issue in this configuration because the DX backup set contains all vital information for proper disaster recovery.

Creating Extended Drive Backups

During an extended drive backup, DX inventories *all* of the files on an extended drive and sees that the appropriate information (file data, file tags and all necessary additional data) is saved. The Extended Drive Backup utility allows you to set a network path for the backup data, set your backup schedule, and select to run both full and incremental backups.

Incremental backups are generally used in between full backup schedules to back up files not previously backed up by DX. Incremental backups take significantly less time than full backups. A Full DX backup will create a backup file for all files on the extended drive, regardless of whether those files are managed by DX or not.

Extended drive backups can be forced or scheduled. Extended drive backup scheduling is managed at the extended drive level, using the Backup button on the Settings tab in the properties for each extended drive. Until you set up a backup schedule for the extended drives, automatic backups are disabled.

Scheduling Extended Drive Backups

The extended drive backup scheduling function is accessed through the Extended Drive Properties. For the most complete backup results, you will want to schedule your extended drive backups to occur when the fewest number of users are likely to be accessing DX files. While the backup will run when users have files open, most applications will not allow simultaneous access to open files, meaning any open files will be "locked" to the backup process. Files that are locked when the backup is run are skipped at that time, but will be captured during the next backup.

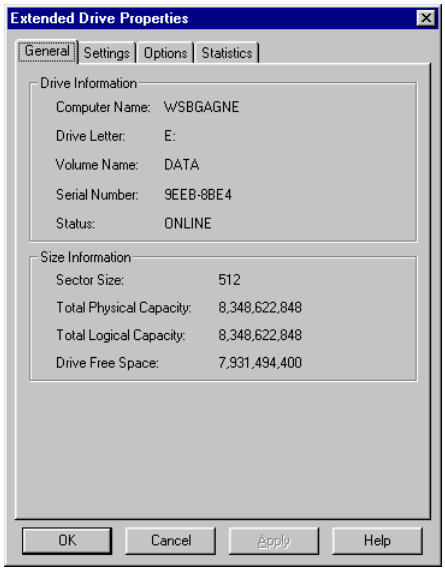
To access the extended drive backup schedule:

1 You have two choices:

- With the appropriate extended drive highlighted in the tree view, select Properties from the Edit menu.
- Right-click on the appropriate extended drive and select Properties from the shortcut menu.

The Extended Drive Properties dialog box appears.

Figure 154: Extended Drive Properties Dialog Box

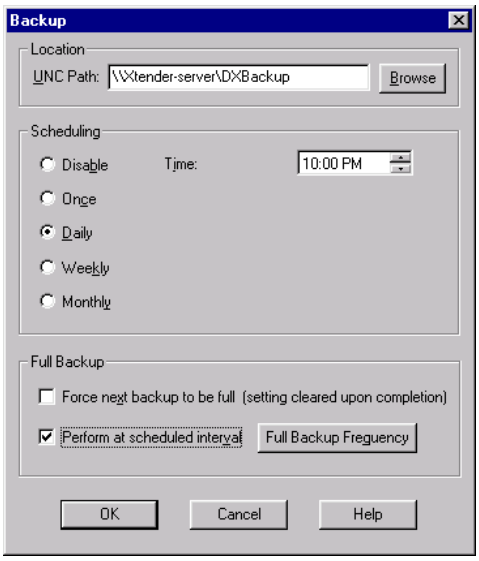


2 Click the Settings Tab. The Settings Page appears.

Figure 155: Extended Drive Properties – Settings Page

3 Click Backup. The extended drive Backup dialog box appears.

Figure 156: Extended Drive Backup Dialog Box



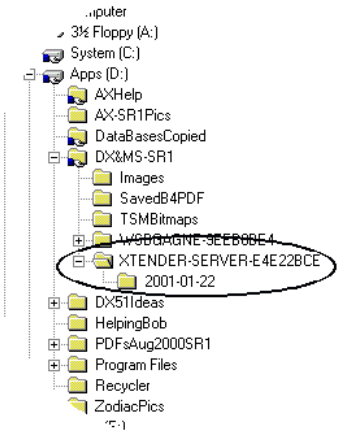
The Backup dialog box contains three sections. The top section allows you to type in or to browse to the folder in which you want your backup files saved. The second section is a Scheduling section that allows you to select a regular schedule for incremental backups. The third section is a Full Backup section that allows you to set regular schedules for complete DX backups, and to select to force DX to create a full backup the next time the incremental backup schedule is active.

To set an extended drive backup schedule:

1 In the UNC Path text box of the Location section of the Backup dialog box, type in or browse to the folder in which you want to have your backup sets saved.

When your backup is created, DX will create a folder hierarchy within the identified folder that lists the name and serial number of the extended drive, and within that, a folder with the date of the backup created.

Figure 157: Backup Folders Created in Explorer



Each time a new full backup is created, a new dated folder is created that *replaces* the old one. This means that only the current full and associated incremental backups are resident in the UNC path at any given time.

2 In the Scheduling section of the Backup dialog box, select the frequency with which you want incremental (and if selected, forced full) extended drive backups created. This schedule is disabled by default, and will remain disabled until you set a schedule.

The table below lists the scheduling options and descriptions available for incremental (and forced full) backups.

Table 23: Incremental Backup Scheduling Options

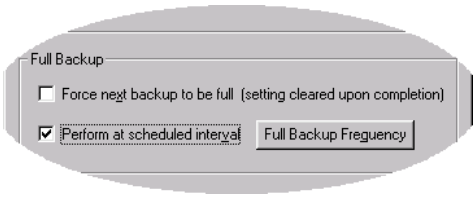
OPTION:	DESCRIPTION:
Disable	Disables all backup functions.
Once	Creates a one-time backup at the time and date specified in the Time and Date spin boxes. After the backup is created, the schedule setting returns to disabled.
Daily	Creates a backup every day at the time specified in the Time spin box.
Weekly	Creates a backup at the time specified in the Time spin box on the day(s) of each week specified by checking the Select Day(s) of Week checkbox(es).
Monthly	Creates a backup at the time specified in the Time spin box on the day of each month specified in the Day of Month spin box.

NOTE

If you need detailed information on how to use this scheduler, please see the *Incremental Backup Scheduling Options* on page 170.

3 In the Full Backup section of the extended drive Backup dialog box, there are two checkboxes that pertain to the creation of full backups. Full backups are extended drive backup sets containing all file information for the extended drive.

Figure 158: Full Backup Options in Backup Dialog Box



4 Enable the Force next backup to be full (setting cleared upon completion) option to force DISKXTENDER to create a full extended drive backup the next time the incremental backup schedule is activated. Once completed, this setting is cleared. (Selecting this option will not affect any scheduled full backups described in step 5 below.)

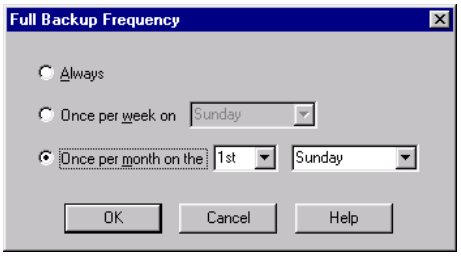
5 Enable the Perform at scheduled interval option to set a regular schedule for DISKXTENDER to create full extended drive backups. (Selecting this option will not affect a forced full backup described in step 4 above.)

6 If you enabled the Perform at scheduled interval option, click Full Backup Frequency. The Full Backup Frequency dialog box appears.

NOTE

DISKXTENDER will not allow you to schedule full backups more frequently than incremental backups. For this reason, you will notice that the Perform at scheduled interval option on the Backup dialog box, and the full backup scheduling options in the Full Backup Frequency dialog box may be grayed out, depending on your incremental backup schedule.

Figure 159: Full Backup Frequency Dialog Box



7 You have three options:

- Select Always to create a full extended drive backup every time the incremental backup schedule is active. If you select this option, DX will always create a full backup and never create incremental backups.
- Select Once per week on ____ to create a full extended drive backup once per week on the selected day. If you select this option, DX will create a full backup on the selected day, and create incremental backups at the time(s) configured for the incremental backup schedule.
- Select Once per month on the ___ (1^{st} – 4^{th}) _____ (day) to create a full extended drive backup once a month on the selected day of the month. If you select this option, DX will create a full backup on the selected day, and create incremental backups at the time(s) configured for the incremental backup schedule.

Full backups can often be time-consuming because a full backup will include all files on the extended drive, regardless of whether or not they are managed by DISKXTENDER. Please keep this in mind when setting your full backup schedule.

8 After setting your Full Backup Frequency schedule, click OK. You are returned to the Backup dialog box.

9 When all extended drive backup schedule settings are complete, click OK to return to the Extended Drive Properties Settings tab.

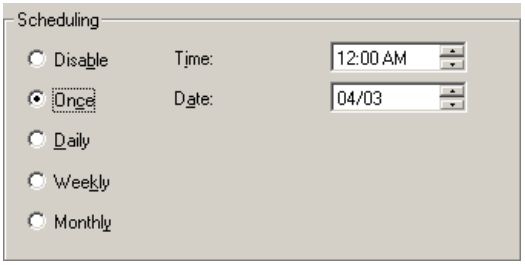
Incremental Backup Scheduling Options

The Scheduling section of the Backup dialog box allows you to schedule backups as frequently as is appropriate for your system needs. Backups can be scheduled to occur once, daily, weekly, or monthly. You can also disable automatic backups. Disable is the default, and backups will remain disabled until you set a schedule.

To perform a one-time backup:

1 Click Once in the Scheduling section of the Backup dialog box. The Date and Time spin-boxes appear.

Figure 160: One-time Backup Options



2 In the Date spin-box, specify the date you want the backup to occur.

3 In the Time spin-box, specify the time you want the backup to occur.

NOTE

The default values for the Date and Time spin boxes are today's date and 12:00AM respectively. Because it is likely this default time occurs in the past, the backup will not run unless you change the defaults to a date and/or time in the future.

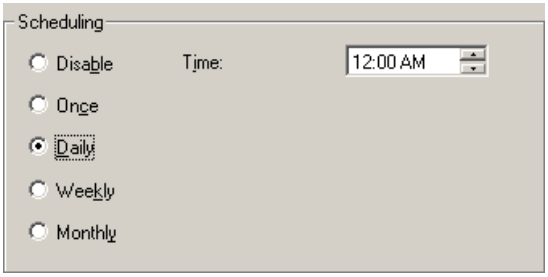
NOTE

After a one-time backup is processed, the backup schedule is disabled, meaning backups will not occur again unless forced or scheduled.

To configure the backup to occur on a daily basis:

1 Click Daily in the Scheduling section of the Backup dialog box. The Time spin-box appears.

Figure 161: Daily Backup Options

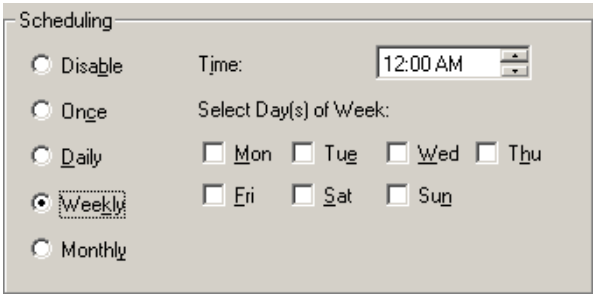


2 In the Time spin-box, specify the time when you want the backups to occur.

To configure the backup to occur on a weekly basis:

1 Click Weekly in the Scheduling section of the Backup dialog box. The Time spin-box, and checkboxes for the days of the week appear.

Figure 162: Weekly Backup Options



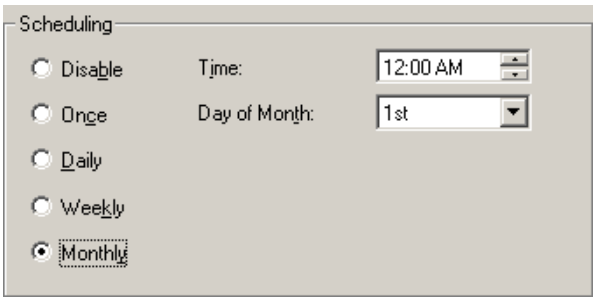
2 In the Time spin-box, specify the time you want the backups to occur.

3 Under Select Day(s) of Week, specify which day(s) of the week you want the backups to occur.

To configure the backup to occur on a monthly basis:

1 Click Monthly in the Scheduling section of the Backup dialog box. The Time spin box, and the Day of Month drop-down list box appear.

Figure 163: Monthly Backup Options



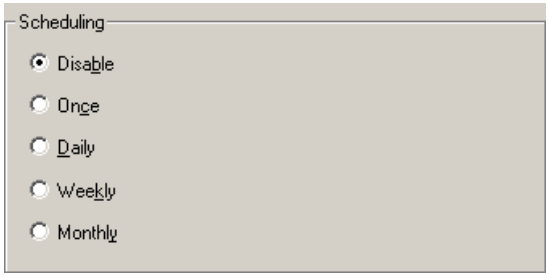
2 In the Time spin-box, specify the time you want the backups to occur.

3 In the Day of Month drop-down list box, specify the date for the backups to occur.

To disable automatic backups for this drive:

➲ Click Disable in the Scheduling section of the Backup dialog box.

Figure 164: Disable Backup Option



Forcing an Extended Drive Backup

Like the Force Drive Scan function, DISKXTENDER allows you to force an extended drive backup whenever needed. Forcing an extended drive backup is similar to running an incremental backup using the Once option. All files that have not been marked as having been previously backed up, will be backed up at that time.

If there is no current backup of the DX extended drive, forcing an extended drive backup will force a full backup (essentially an incremental backup of all files, because they have not been backed up before). If there has been a backup of the DX extended drive created at some point, forcing an extended drive backup will create a

true incremental backup, capturing all files since the last backup (either full or incremental) was run.

A forced extended drive backup uses the folder specified in the UNC Path text box of the Backup dialog box to save the backup. You must have this path information entered in order to force an extended drive backup.

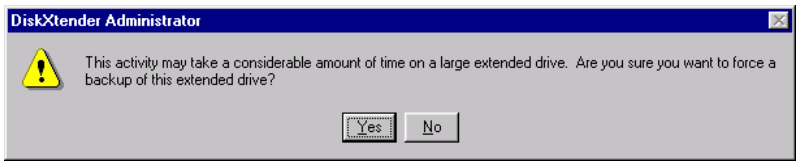
To force an extended drive backup:

1 You have two choices:

- With the appropriate extended drive highlighted in the tree view, select Force Backup from the Edit menu.
- Right-click on the appropriate extended drive and select Force Backup from the shortcut menu.

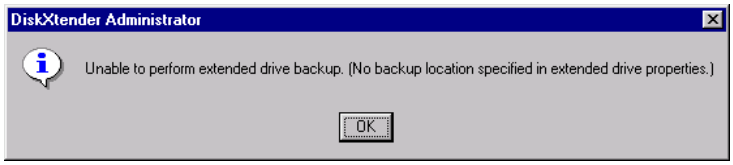
A message appears reminding you that an extended drive backup may take a considerable amount of time for a large extended drive.

Figure 165: Force Extended Drive Backup Warning Message



2 Click Yes on the message to continue with the forced extended drive backup. If you have not configured a UNC Path in the Backup dialog box, you will receive an error message.

Figure 166: Force Extended Drive Backup Error – No Path Defined



Click OK to close the message and return to DISKXTENDER. Follow the *Scheduling Extended Drive Backups* instructions beginning on page 165 to set a UNC Path for your backup.

If you have a location path configured, the backup will proceed and the forced backup will be saved in the specified UNC Path folder.

Stopping an Extended Drive Backup in Progress

DX allows you to stop an extended drive backup after one has started. This function may be useful if a scheduled backup begins at an inconvenient or inappropriate time,

or if you forced a backup and later determined it was going to take more time that could be allotted for the function.

When you stop an extended drive backup in progress, the system will finish backing up the file it was on when the stop backup command was issued, and will retain whatever files were backed up to that point. Any files not backed up will be captured during the next backup process.

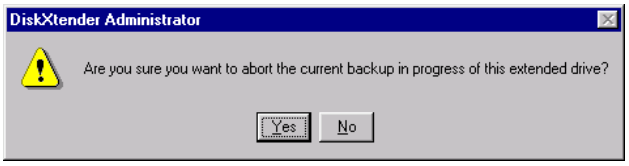
To stop an extended drive backup in progress:

1 While a backup is running, you have two choices:

- With the appropriate extended drive highlighted in the tree view, select Abort Backup from the Edit menu.
- Right-click on the appropriate extended drive and select Abort Backup from the shortcut menu.

A verification message appears.

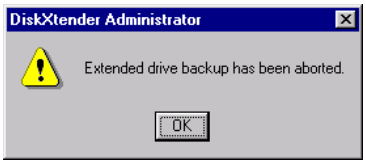
Figure 167: Abort Extended Drive Backup Verification Message



2 Click Yes to abort the extended drive backup. Click No to allow the backup to continue.

3 If you clicked Yes, a message appears confirming that the extended drive backup was aborted.

Figure 168: Extended Drive Backup Aborted Message



4 Click OK to close the message and return to DISKXTENDER.

REPAIR DISK UTILITY

In the event that the DX computer drive becomes corrupted, DX contains a Repair Disk utility that periodically creates a disk image of the DX computer system drive. You can create a current disk image when needed using the Repair Disk utility or, in the event of a DX computer crash, use an existing disk image to restore the DX configuration.

The Repair Disk utility can be used to create a backup copy of the registry information for DX system. Every time a change is made to the DX configuration, DX automatically updates the registry backup. You can set the location where the repair disk is automatically saved, set a location for a copy of the registry for the current DX configuration, or restore DX registry settings using the Repair Disk Wizard.

This section provides procedures for setting the backup location for your repair disk and for creating a copy of the repair disk backup. For information and instructions on restoring a repair disk file, see *Restoring DX Registry Settings* on page 179

Setting the Repair Disk Location

The Repair Disk Wizard allows you to designate where DX will store the registry information image it creates. In order to ensure fail-proof disaster recovery, the image should be copied to a location separate from your Windows Server files. Ideally, you should copy them to a different volume.

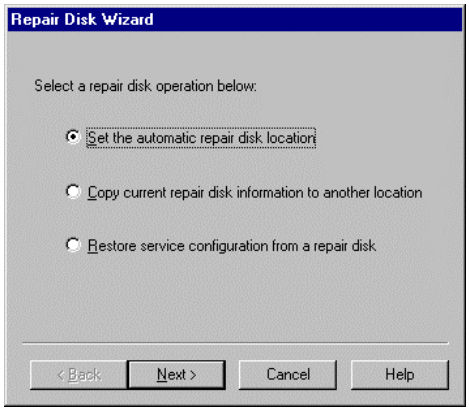
NOTE

The location of the disk image should be backed up regularly.

To set the repair disk location:

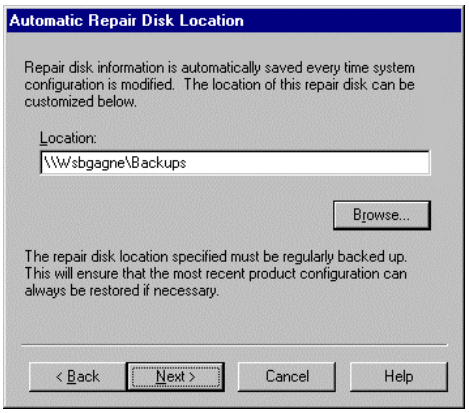
1 Select Repair Disk from the Tools menu to start the Repair Disk Wizard. The Repair Disk Wizard page appears.

Figure 169: Repair Disk Wizard



2 Choose the Set the automatic repair disk location option and click Next. The Automatic Repair Disk Location page appears.

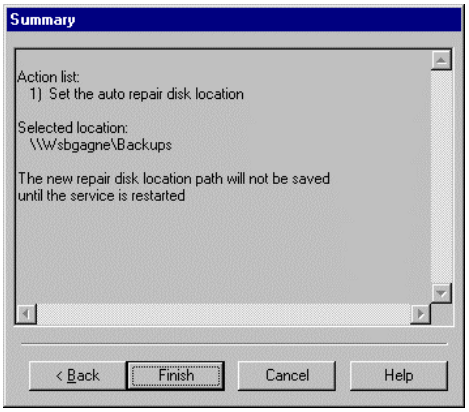
Figure 170: Automatic Repair Disk Location



3 The default directory path appears in the Location text box. You may change it by entering a different directory path in the Location text box. To search for a location, click the Browse button and select a path in the Browse for Folder dialog box, then click OK to return to the Automatic Repair Disk Location page.

4 Once you have entered a path in the Location text box, click Next. The Summary page appears.

Figure 171: Repair Disk Summary Page



5 Review the information in the summary. To change the location, click Back to return to the previous page.

6 When the information in the Summary is correct, click Finish to complete the wizard. A progress message appears, indicating that the auto disk repair location is being saved. Once the message disappears, the location setting is complete.

Copying the Current Configuration

In addition to designating where the registry backup is stored, The Repair Disk Wizard also allows you to store a copy of the current registry settings at will. When you use the Repair Disk Wizard to set a location for a copy of the current configuration, DX creates a copy of the DX configuration as soon as the wizard is completed.

NOTE

Setting a location for a copy of the current configuration does not affect the location for automatic backup. DX will continue to back up DX registry information to the location set for automatic repair disk creation.

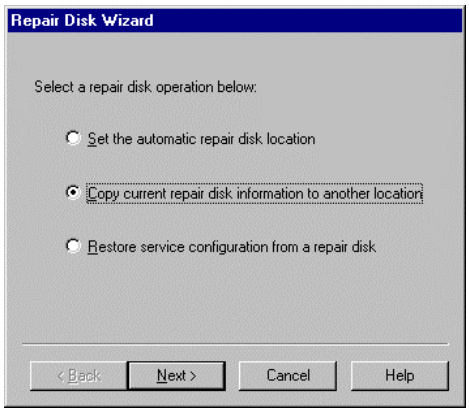
NOTE

You must pause the DX service in order to create a backup of the product registry.

To store a copy of the current disk image:

1 Select Repair Disk from the Tools menu to start the Repair Disk Wizard. The Repair Disk Wizard page appears.

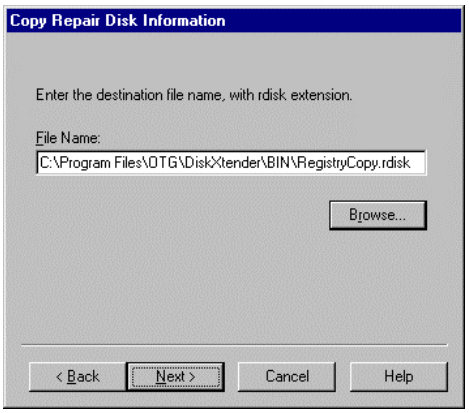
Figure 172: Repair Disk Wizard



2 Select the Copy current repair disk information to another location option

3 Click Next. The Copy Repair Disk Information page appears.

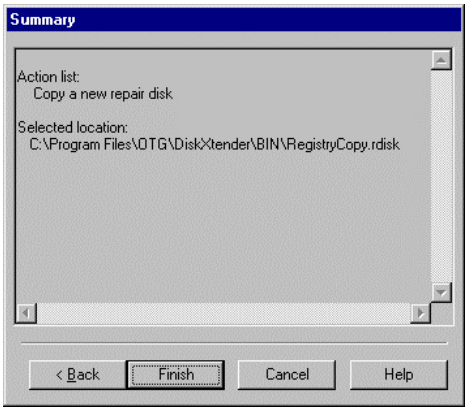
Figure 173: Copy Repair Disk Information Page



4 Enter a directory path in the Location text box. To search for a location, click the Browse button and select a path in the Browse for Folder dialog box, then click OK to return to the Copy Repair Disk Location page.

5 Once you have entered a path in the Location text box, click Next. The Summary page appears.

Figure 174: Copy Repair Disk Summary Page



6 Review the information in the summary. To change the location, click Back to return to the previous page.

7 When the information in the Summary is correct, click Finish to complete the wizard. A progress message appears, indicating that the copy disk repair location is being saved. Once the message disappears, the location change is complete.

DX RESTORE FUNCTIONS

In the event of catastrophic system failure, the same DX utilities that allowed you to create backups of your extended drive files and your registry settings, also allow you to restore those backups to your DX system. The restore functions for the DX Repair Disk utility and the Extended Drive Backup utility, make recovery and re-configuration of your system after a disaster both faster and more accurate.

This section provides information and procedures for restoring backup files and registry configurations in the event you ever need to restore your DX system after a disaster or catastrophic system failure.

Before You Restore DX

When a system failure or disaster occurs, the following steps should be taken in order to most effectively restore your DX system, DX files, and DX configurations:

To restore your DX system:

1. Reformat DX computer hard drive.
2. Reinstall Windows NT/2000.
3. Reinstall DISKXTENDER.
4. Restore Repair Disk (DX Registry) file.
5. Run Change Extended Drive Serial Number wizard (will automatically appear if the change is required – otherwise, continue with next step).
6. Restore Extended Drive Backup.

These steps should be sufficient to get your DX system back up and running after a disaster or system failure. As always, however, if you run into any problems, contact your technical support representative for assistance.

RESTORING DX REGISTRY SETTINGS

When NTFS corruption occurs on your DX computer, you can restore your DX registry configuration by restoring the disk image using the backup registry copies. Once you have reinstalled all of the necessary software components, you can use the Repair Disk Wizard to restore your DX service configuration.

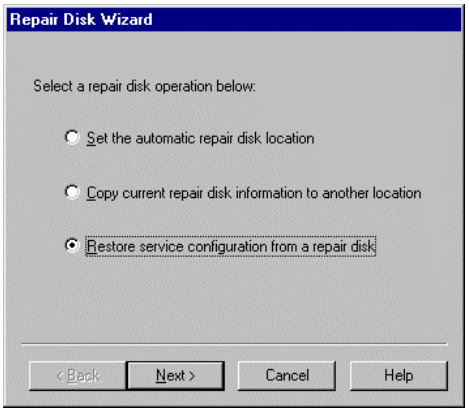
NOTE ✍

Depending on what problems occurred to cause you to have to restore your DX system, you may be prompted to run the Change Extended Drive Serial Number wizard before restoring the DX registry. If the wizard appears, we recommend that you click Cancel and run the repair disk restore first.

To restore the DX registry configuration:

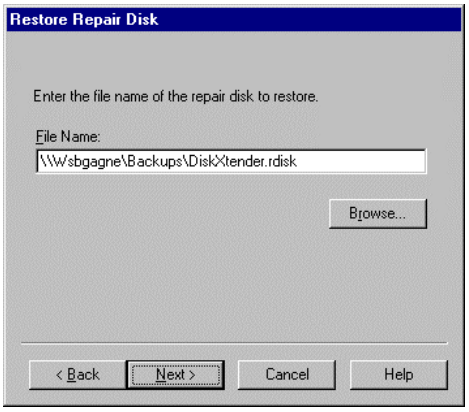
1 From the Tools menu, select Repair Disk to start the Repair Disk Wizard. The Repair Disk Wizard page appears.

Figure 175: Repair Disk Wizard



2 Choose the Restore service configuration from a repair disk option and click Next. The Restore Repair Disk page appears.

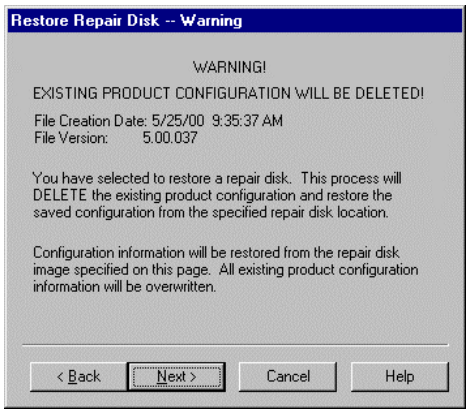
Figure 176: Restore Repair Disk Location Page



3 Enter the directory path to the repair disk in the Location text box. To search for a location, click the Browse button and select the path in the Browse for Folder dialog box, then click OK to return to the Restore Repair Disk page.

4 Once you have entered a path in the Location text box, click Next. The Restore Repair Disk – Warning page displays. Read carefully.

Figure 177: Restore Repair Disk – Warning Page

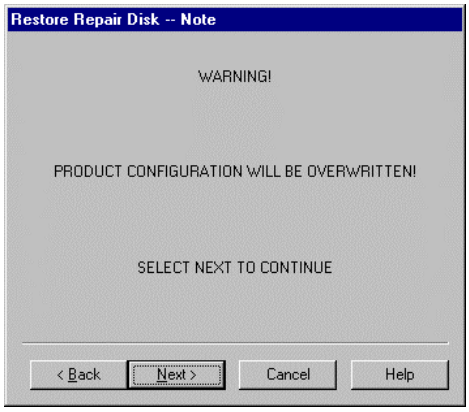


NOTE

In the event that there is a problem with the stored disk image, you may want to go back and copy the current configuration to a different location before proceeding. This will save an image of the current DX configuration, if appropriate.

5 Click Next. The Restore Repair Disk – Note page appears.

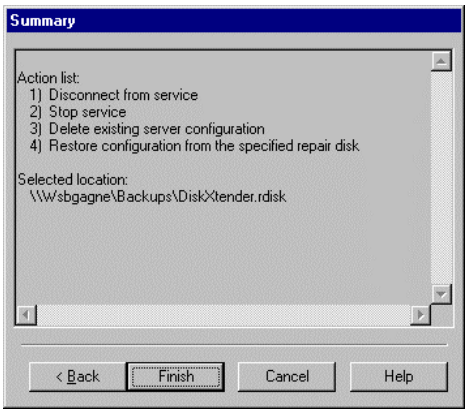
Figure 178: Restore Repair Disk Note Page



This page provides a reminder that the current product configurations will be overwritten with the saved configuration from the specified repair disk location.

6 To continue, click Next. The Summary page appears.

Figure 179: Summary Page



7 The Summary page lists details about the restore. Review this information carefully. To change the location, click Back three times to scroll back through the wizard and return to the Location page. Click cancel to exit the process without restoring the configuration.

8 When the information in the Summary is correct, click Finish to complete the wizard. The registry information is copied and the backup DX configuration is restored to your machine

After your DX registry is restored, we recommend restarting the DX computer in order to make sure that the necessary changes have been made to the registry. After restart, if necessary, DX may prompt you to run the Change Extended Drive Serial Number wizard.

CHANGE EXTENDED DRIVE SERIAL NUMBER UTILITY

DISKXTENDER tracks extended drives by the volume serial number assigned to each NTFS volume. This number is set during the format process, and uniquely identifies each NTFS volume on a network.

In a disaster recovery scenario, it is likely that the volume serial number for a drive will change (due to reformatting the drive). In this case, the extended drive in DISKXTENDER (identified by the old serial number) will appear as OFFLINE in the administrator, indicating that the extended drive cannot be found.

The Change Extended Drive Serial Number wizard allows users to view all OFFLINE extended drives, and redefine volume serial numbers for each drive. When completed, this wizard will reset the DISKXTENDER configuration to recognize “old” extended drives under the “new” volume serial number.

This wizard is typically used after restoring a DISKXTENDER repair disk. In most cases, the extended drive has been lost and reformatted before restoring the DX repair disk. Although the repair disk restores all pre-existing configuration information for DISKXTENDER, it has no way of knowing what drives have been reformatted, or what their new serial numbers are.

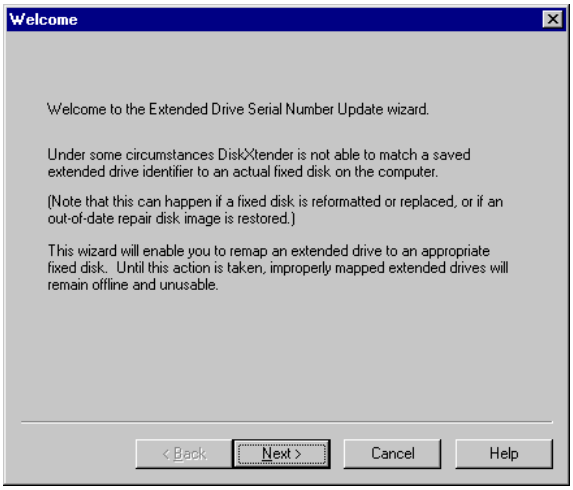
Using the Change Extended Drive Serial Number utility, you may select new volume serial numbers from a drop down list containing all unused volume serial numbers on the DISKXTENDER computer.

Be advised, there is no way to manually start the Change Extended Drive Serial Number utility. The wizard will automatically start when the DISKXTENDER service starts and determines that one or more extended drives are offline.

To process the Change Extended Drive Serial Number Wizard:

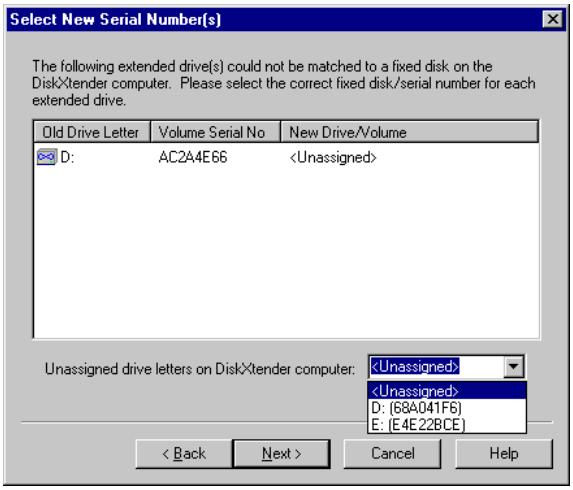
1 When the wizard starts, the Welcome page appears.

Figure 180: Change Extended Drive Serial Number Wizard Welcome Page



2 Read the information in the Welcome page and click Next. The Select New Serial Number(s) page appears.

Figure 181: Select New Serial Number Page

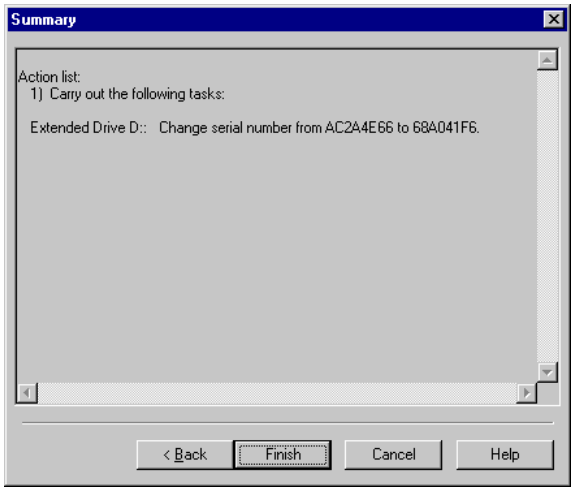


The Select New Serial Number(s) page lists all offline extended drives, and the serial number previously assigned to those drives. At the bottom of the page is a drop-down list of all currently unassigned drive letters on the DISKXTENDER computer.

3 Highlight the drive with the serial number you want to change and select the appropriate drive letter (and new serial number) from the drop-down list.

4 Click Next. The Summary page appears.

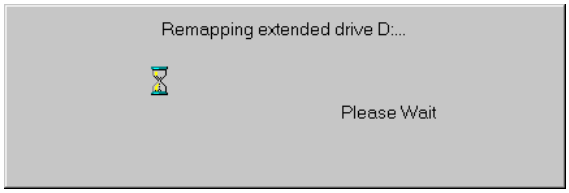
Figure 182: Summary Page



5 Review the information in the summary. If necessary, click Back to return to the previous page and change the selected options.

6 If the information in the summary is correct, click Finish. A progress message appears, letting you know that the extended drive is being remapped.

Figure 183: Progress Message



When the process is complete, you are returned to the DISKXTENDER Administrator and your extended drive should now appear in the tree view.

RESTORING EXTENDED DRIVE FROM BACKUP

If you have created extended drive backups, DX allows you to restore the backed up files. If it is necessary, the Extended Drive Backup Restore function allows you to

restore extended drive files backed up from a different extended drive, in the event that the entire structure of your DX system had to change to accommodate recovery.

The extended drive backup restoration utility functions as a wizard that leads you step by step through the extended drive file restoration process.

Be advised, that an extended drive backup restore will not overwrite files created on the extended drive since the backup was created, and as such, will not restore files from a backup if a file of the same name already exists on the extended drive. Because of the potential for confusion or for maintenance of outdated or corrupted files, we strongly recommend that you not use the extended drive backup restore function except as a disaster recovery tool.

To start the extended drive backup restore wizard:

1 You have two choices:

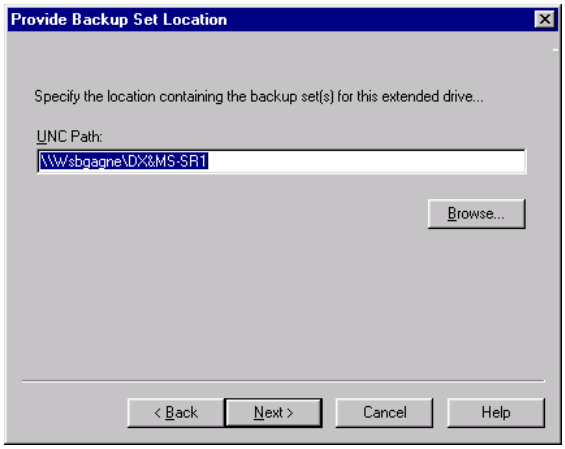
- With the appropriate extended drive highlighted in the tree view, select Restore Backup from the Edit menu.
- Right-click on the appropriate extended drive and select Restore Backup from the shortcut menu.

The Extended Drive Backup Restore Wizard welcome page appears.

Figure 184: Extended Drive Backup Restore Wizard Welcome Page

2 Click Next to continue with the wizard. The Provide Backup Set Location page appears.

Figure 185: Provide Backup Set Location Page

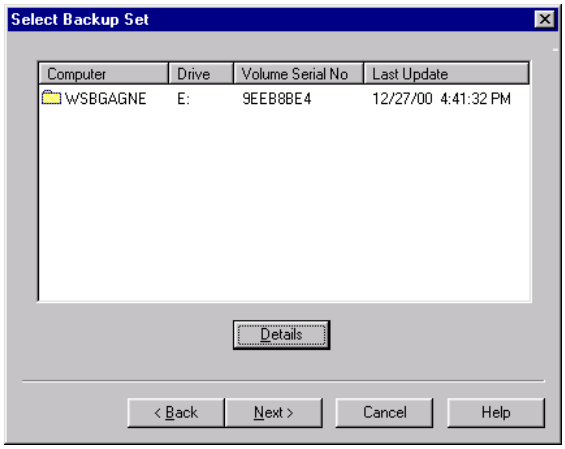


3 The extended drive backup folder location appears in the UNC Path text box by default. If this is not the correct path, type in or browse to the appropriate folder and click Next. The Select Backup Set page appears.

WARNING

You must select the same UNC path that you specified for the extended drive backup. ***Do not*** attempt to specify the DX-created extended drive backup folder (identified by date) for the restore. The extended drive restore utility will find the most recent backup(s) automatically, and allow you to select the appropriate one through the wizard

Figure 186: Select Backup Set Page

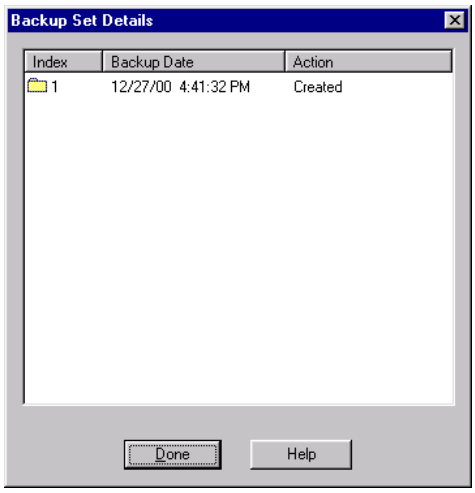


Since you can create backup sets for more than one extended drive and maintain them in the same UNC path, you may have multiple backup sets to choose from. However, DX only retains the most recent backups for each extended drive, so

you will have only one backup set to choose from within each extended drive backup folder.

4 Highlight the appropriate backup set and click Details to view the folder and date information.

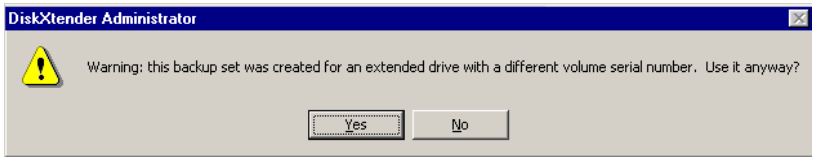
Figure 187: Backup Set Details Dialog Box



5 When you are finished viewing the details, click Done. You are returned to the Select Backup Set page.

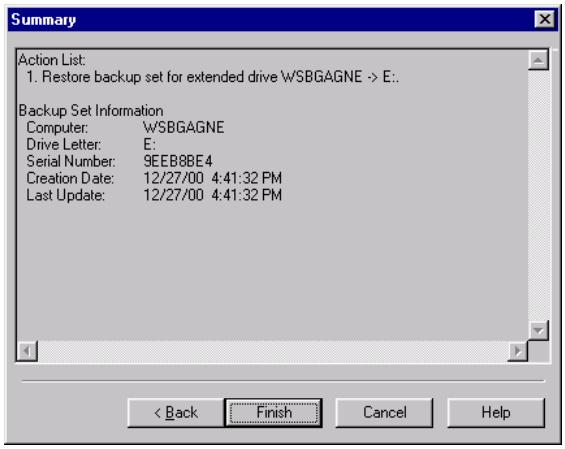
6 Make sure the backup set you want restored is highlighted and click Next. If for some reason you are restoring an extended drive backup to a *different* extended drive than the one from which the backup was created, or if you had to change the serial number of the extended drive as part of the recovery procedure, a verification message appears.

Figure 188: Backup Verification Message



7 Click Yes to continue with the restore. The Summary page appears.

Figure 189: Extended Drive Backup Restore Summary Page



The summary page lists the information for the backup set you want to restore.

8 Review the information in the summary page. If it is correct, click Finish. If necessary, click Back to return to the previous page in the wizard to adjust your selection.

9 After clicking Finish, your extended drive files are restored to the point at which the backup was created.

After restoring your extended drive backup, you may want to run one or more of the available DX reports to make sure that your system has been returned to the appropriate state and that DX files, system registry, and media have been reset to their proper configuration.

CHAPTER SEVEN

EXPLORER ADD-ONS

DISKXTENDER Explorer Add-ons provide access to limited administrative functions for DX files. In order to perform these functions from a client workstation connected to a DX extended drive, a full DISKXTENDER setup is not necessary. Those workstations from which you want to run those functions only need to install the Explorer Add-ons.

Explorer Add-ons can be installed on client workstations to allow users access to file and directory information for files managed by DX. An Explorer Add-ons installation sets up the Explorer Add-ons module on the workstation. Explorer Add-ons can be run on a Windows NT/2000 server or workstation, or a Windows 95/98/ME workstation.

This chapter deals specifically with installation, use and configuration of the Explorer Add-On components. For information on uninstalling the Explorer Add-Ons, see *Chapter Eight: Removing DX and DX Components* on page 217.

NOTE

The term "DX File" refers to any file managed by DISKXTENDER. DISKXTENDER is not considered to be managing files until the file has been moved by DX to media, even though the file may currently reside on the extended drive.

INSTALLING EXPLORER ADD-ONS

Like all DISKXTENDER components, the Explorer Add-Ons have a setup wizard that leads you through the necessary steps for installing the Explorer Add-ons. The Next button continues to the following step; the Back button (when active) returns to the preceding step. The Cancel button exits Setup, canceling the process.

For your convenience, the setup wizard allows you to install the Explorer Add-Ons on multiple computers at once, provided those computers are visible on your network

and you have Administrator privileges on those computers. To take advantage of this feature, you may want to determine which computers are to have Explorer Add-Ons installed on them and make sure you have the appropriate privileges on those workstations before you run the installation wizard. This will enable you to only run the installation once rather than multiple times.

NOTE

Before running Setup, exit all applications. Setup may not be able to write to all necessary files if other software is running.

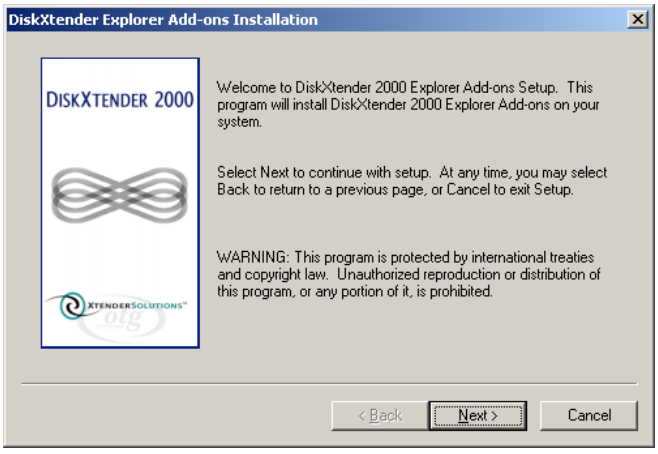
To install the explorer add-ons:

1 Insert the DISKXTENDER setup CD-ROM into the drive. From the Windows Start menu, select Run. The Run dialog box appears.

2 You can either browse to the file or type the path in the Open text box:
`D:\DX2000.XXX\DISKXTENDER EXPLORER ADD-ON\SETUP.EXE`
(In this path, `D` represents the drive holding the setup CD-ROM and *XXX* represents the DX2000 version number.)

3 Once the file/path appears in the Open text box, click OK. DISKXTENDER Explorer Add-ons setup is initiated (which may take up to two minutes), and then the DISKXTENDER Setup wizard appears, starting with the Explorer Add-ons Installation page.

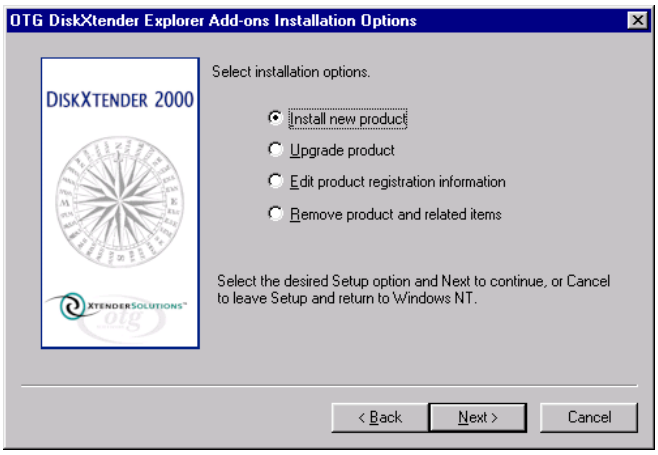
Figure 190: Explorer Add-ons Installation Page



The Explorer Add-ons Installation page briefly describes the installation process.

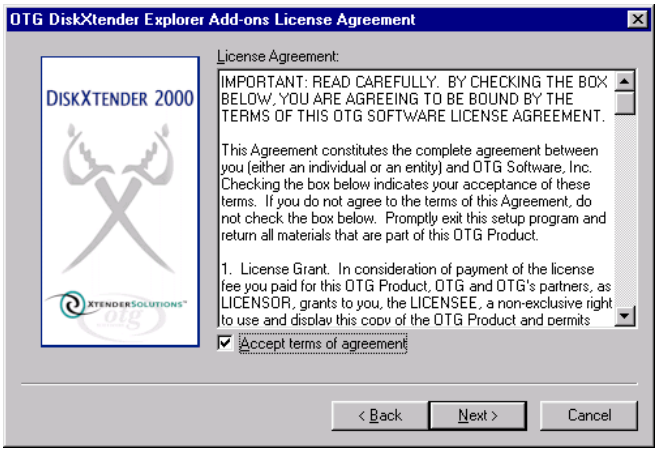
4 Click Next. The Explorer Add-ons Installation Options page appears.

Figure 191: Explorer Add-ons Installation Options Page



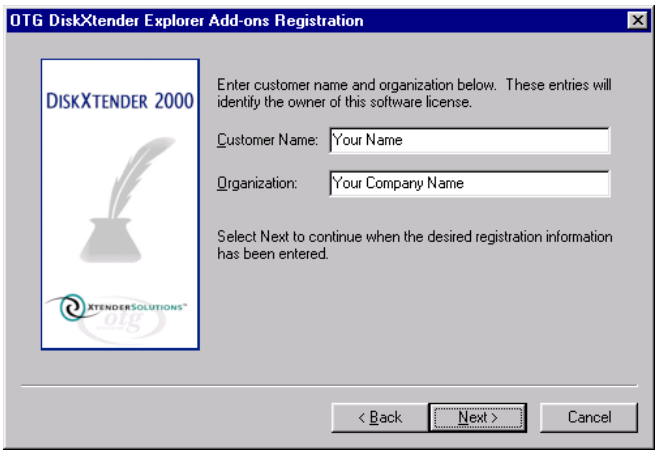
5 Select the Install New Product option and click Next. The Explorer Add-ons License Agreement page appears.

Figure 192: Explorer Add-ons License Agreement Page



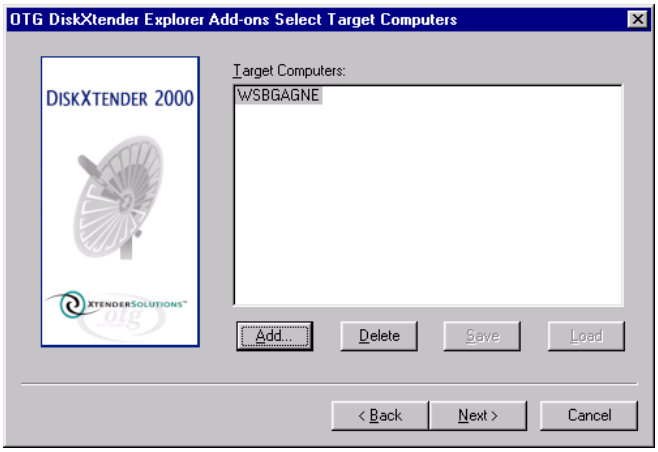
6 You must accept the terms of the license agreement before you can proceed with the installation. Click the checkbox next to Accept terms of agreement to agree to the terms of the agreement. Click Next. The Explorer Add-ons Registration Information page appears.

Figure 193: Explorer Add-ons Registration Information Page



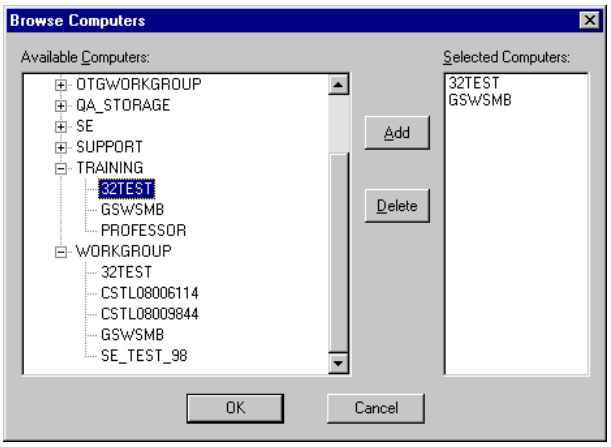
7 Enter the customer name and organization name. Click Next. The Select Target Computers page appears.

Figure 194: Select Target Computers Page



8 If you want to install Explorer Add-ons on more computers, click Add. The Browse Computers dialog box appears.

Figure 195: Browse Computers Dialog Box

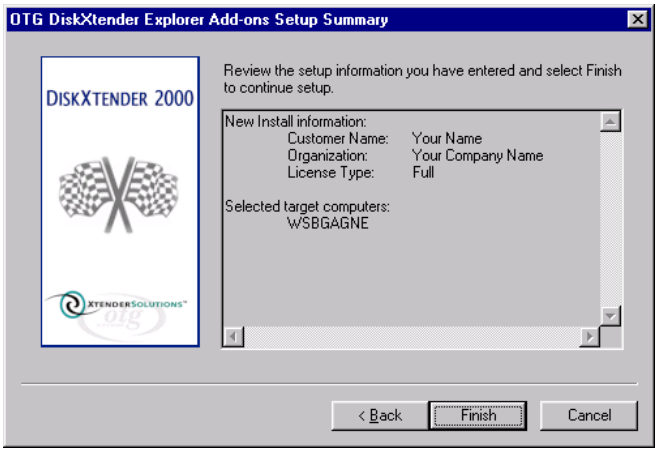


9 Under Available Computers, navigate to and select the computer on which you want to install the Explorer Add-ons. Click Add. The computer you have selected is listed under Selected Computers. Repeat this step for each additional computer on which you want to install the Explorer Add-ons.

10 Click OK. You are returned to the Select Target Computers page.

11 When the Target Computers list is complete, click Next. The Explorer Add-ons Setup Summary page appears. This page shows the customer name and organization and lists the target computers for the Explorer Add-ons installation.

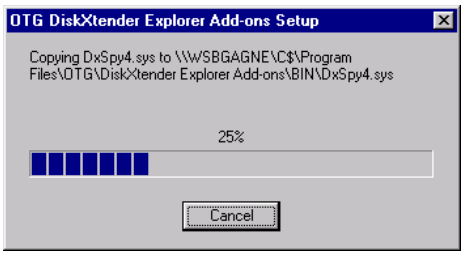
Figure 196: Explorer Add-ons Setup Summary Page



12 Verify the accuracy of the information. If all information is correct, click Finish. The Explorer Add-ons Setup copies all program files onto the system, and adds Explorer Add-ons entries and the program group to the system configuration for each target computer selected. A progress message displays the status of the

operation, while a DISKXTENDER window displays information about DX, its components, and utilities.

Figure 197: Setup Progress Bar

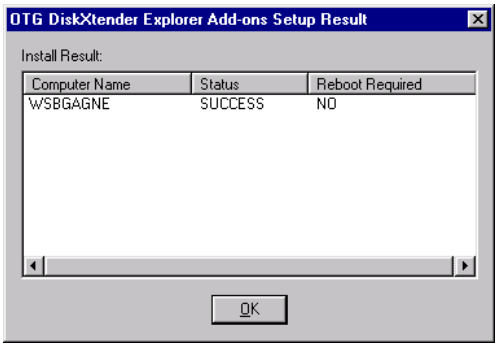


NOTE

If necessary, you can cancel the setup procedure by clicking Cancel.

The Explorer Add-ons Setup Results dialog box appears, listing the installation results for each computer you specified.

Figure 198: Explorer Add-ons Setup Results Dialog Box



13 Take note of any computers that need to be restarted (or computers on which the installation failed). Click OK.

If you are not required to restart the computer the Explorer Add-ons installation has been successfully completed. Otherwise, installation will be complete after restart.

The DISKXTENDER Explorer Add-ons program group is installed. The Explorer Add-ons are now ready for use by the client workstation.

USING EXPLORER ADD-ONS

You can install DX Explorer Add-ons on any DISKXTENDER client machine. The Explorer Add-Ons allow users to view DX file and media folder properties from

client machines without a full installation of DISKXTENDER. The Explorer Add-Ons enable this by connecting to the extended drive through Windows Explorer.

You can use the DX Explorer Add-ons to perform the following functions:

- View file properties – see *DISKXTENDER File Properties* on page 199
- Run file reports – see *File Reports* on page 204
- Set direct read for specified files – see *Direct Read* on page 210
- Purge specific files – see *Purge Files* on page 213

The DX Explorer Add-ons can be accessed from the Start menu or from shortcut menus in Windows Explorer.

NOTE

The term "DX Files" refers to any file managed by DISKXTENDER. DISKXTENDER is not considered to be managing files until the file has been moved by DX to media, even though the file may currently reside on the extended drive.

SHELL XTENSIONS WIZARD

The DISKXTENDER Shell Xtensions Wizard provides a simple step-by-step process for executing the Explorer Add-Ons functions. The wizard is accessible both from the OTG DISKXTENDER program group in the Start menu and through the shortcut menu in Explorer.

Explorer Add-Ons functions work identically whether accessed through the Shell Xtension Wizard or through the Explorer Add-Ons commands in the Shortcut menu. The advantage of using the Wizard over the specific shortcut menu commands is the ability to select multiple files from multiple directories through the Select Files page of the wizard. If you are selecting one or more files from only one directory (or all the files in a single directory), it may be faster to use the shortcut menu commands. (For information, see *Explorer Add-Ons Shortcut Menu* on page 198.)

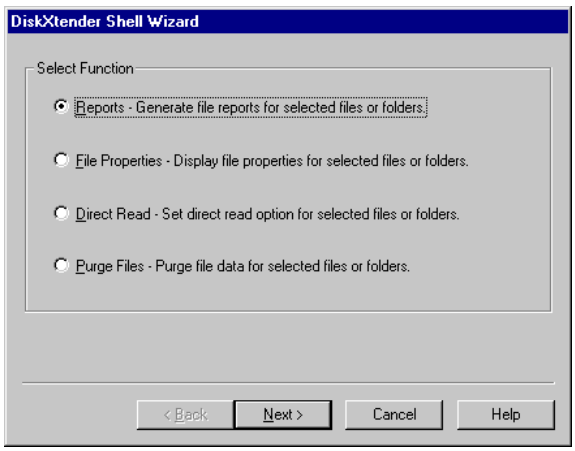
When you first open the wizard, a dialog box appears with four function selection options: Reports, File Properties, Direct Read and Purge Files. Each of these functions and the information they provide is discussed later in this chapter. This section deals specifically with parts of the wizard that will not appear when using the shortcut menu commands.

Accessing the DISKXTENDER Shell Xtensions wizard:

1 You have two options for accessing the wizard:

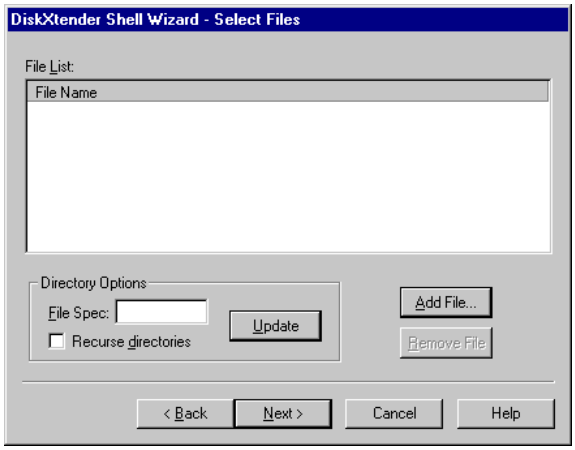
- Navigate to the OTG DISKXTENDER program group in the Start menu and select Shell Xtensions Wizard.
- Right-click in the Windows NT/2000 Explorer and select DISKXTENDER Shell Wizard from the DISKXTENDER option on the shortcut menu.

Figure 199: DiskXtender Shell Wizard



2 Select any one of these options and click Next. The Select Files window appears.

Figure 200: File Selection Window



The options available in this window are as follows:

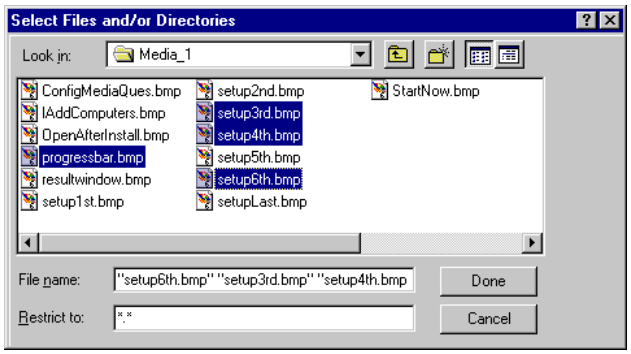
Table 24: DISKXTENDER Shell Wizard File Selection Page Options

OPTION:	DESCRIPTION:
Add File	Click this button to browse for files to add to the file list. You can choose individual files, or you can select a folder and add it. By default, if a folder is selected, all files in the folder will be included.
Remove File	Select a file or folder in the File List and click this button to remove it from the file list. If a folder is removed, all

OPTION:	DESCRIPTION:
	files in the folder will be removed.
File List	This list shows the file or folder specifications that have been selected for processing.
File Spec	Once you have added folders to the File List, you can restrict the files to include in those folders. Select the folder in the File List, and then edit the File Spec text box to specify the file extension for the files on which you want to perform the action you selected.
Recurse directories	Enable Recurse directories to include subdirectories.
Update	If you have made changes to the file specification, click the Update button.

3 Click Add File. The Select Files and/or Directories window opens.

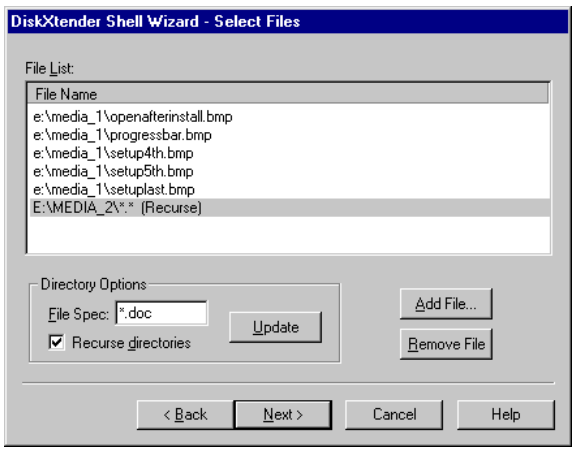
Figure 201: Browse Files Window



This window allows you to select one or multiple files or directories for use in the Explorer Add-Ons function. If you select one or more directories in this window, you can restrict what files in those directories are added to the file list by entering a file name or type in the Restrict to text box at the bottom of this window.

4 After the files you want (or directories) are selected and the File Name(s) or Restrict to text boxes are filled in, click Done. You are returned to the Select Files dialog box, with the selected files/directories shown in the File List.

Figure 202: Select Files Window



If you have added a directory to this list, the Directory Options are active and you may choose to limit the files selected from that directory using the File Spec text box. You may also enable or disable the Recurse directories option. If the Recurse directories option is enabled, the wizard will include files in any subdirectories in the selected directory.

5 If you make any changes in the Directory Options, click Update to update the information in the File List.

6 To add additional files from other directories (or other directories), repeat steps 3 - 5.

7 Once the files to be used for the Explorer Add-Ons function appear in the File List, click Next.

The window that appears next is determined by what function you are running. For details on continuing through the wizard, see each of the following sections:

- *DISKXTENDER File Properties* -- page 199
- *File Reports* – page 204
- *Direct Read* – page 210
- *Purge Files* – page 213

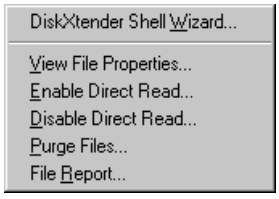
EXPLORER ADD-ONS SHORTCUT MENU

The Shortcut menu commands for the Explorer Add-Ons provide the same functions as the Shell Xtensions Wizard and produce the same results. The only advantage provided by using the wizard over specific commands from the shortcut menu is that the wizard allows you to select multiple files from multiple directories. The shortcut menu only allows for the selection of single or multiple files in one directory, or the selection of single or multiple directories. In addition, shortcut menu access will not allow you restrict which files in a selected directory are to be used.

Essentially, the Shortcut menu provides quick and easy access to the Explorer Add-Ons functions for any file(s) that can be selected in Windows NT/2000 Explorer.

When you open the DISKXTENDER Explorer Add-Ons shortcut menu, you will see six options: DISKXTENDER Shell Wizard, View File Properties, Enable Direct Read, Disable Direct Read, and Purge Files and File Report.

Figure 203: Explorer Add-Ons Shortcut Menu



NOTE

The File Report option only appears on the Shortcut menu if multiple files (or a directory containing multiple files) are selected.

The DISKXTENDER Shell Wizard option opens the Wizard the same way selecting Shell Xtensions Wizard from the OTG DISKXTENDER program group does. For a detailed discussion of the Wizard, see the *Shell Xtensions Wizard* section on page 195.

The other shortcut menu options process the functions listed for the file or files selected, or for all files in the directory or directories selected.

If you select to Enable Direct Read, Disable Direct Read or Purge Files for the selected files, you will receive a confirmation message before the function is processed. If you select to run a File Report on the files selected (or files in the directory you've selected) you will receive a window allowing you to select report options.

The Explorer Add-Ons functions are discussed in detail below.

DISKXTENDER FILE PROPERTIES

DISKXTENDER File Properties are accessed by selecting to View File Properties from the DISKXTENDER shortcut menu, or by selecting File Properties from the Shell Xtensions Wizard.

The File Properties dialog box has three tabs: General, Media and Settings. The information contained in each tab is discussed in detail in the table below the picture of each tab.

File Properties - General Tab

Figure 204: File Properties - General Tab

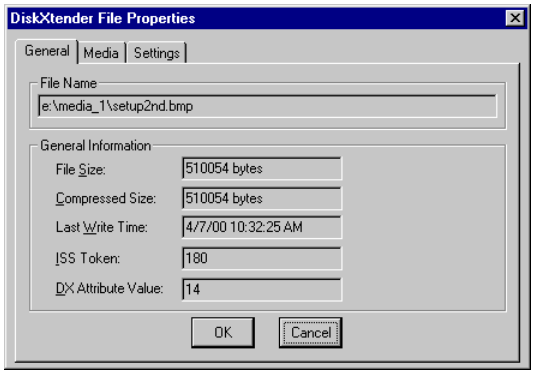


Table 25: File Properties Dialog Box: General Tab Information

OPTION:	DESCRIPTION:
File Name	The name of the file for which properties are currently displayed.
File Size	The size of the file including file data.
Compressed Size	The compressed size of the file on the extended drive. (If the file is not compressed, this value will be zero.)
Last Write Time	The last time the file was modified (or the create time if the file has not been modified).
ISS Token	The sector address on media where the file data for the file has been stored by DX.
DX Attribute Value	The numbers here represent various DX attributes that have been configured for the file.

NOTE

If you attempt to view the properties for a non-DX file, the General Information data is replaced by a message stating that DISKXTENDER does not manage the file.

File Properties - Media Tab

Figure 205: File Properties - Media Tab

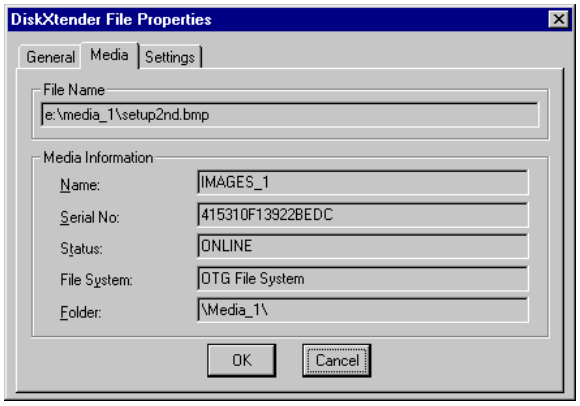
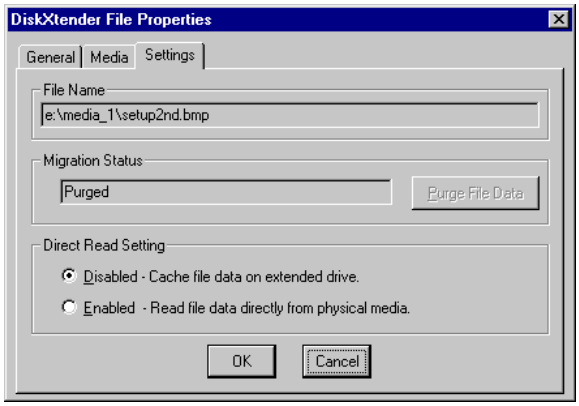


Table 26: File Properties Dialog Box: Media Tab Information

OPTION:	DESCRIPTION:
File Name	The name of the file for which properties are currently displayed.
Name	The name of the piece of media to which the file has been migrated.
Serial No	The serial number of the piece of media to which the file has been migrated.
Status	The current status of the piece of media to which the file has been migrated. Status settings include: Online, Offline, Task in Progress, Task Aborted, Task Failed, Task Pending. If a file is purged and you try to open it, but DX is taking a long time to retrieve it, check the media status to determine if the media is in a state that will allow retrieval. File data that has been purged from the extended drive (see *File Properties - Settings Tab* below for the migration status) can only be retrieved from media that is online. You must correct the condition preventing retrieval before the file can be retrieved (for example, put the media online, clear error status on the media, or cancel the task in progress).
File System	The type of file system used on the media.
Folder	The DX media folder where the media is located.

File Properties - Settings Tab

Figure 206: File Properties - Settings Tab



The following table describes each option on the Settings tab:

Table 27: File Properties Dialog Box: Settings Tab Information

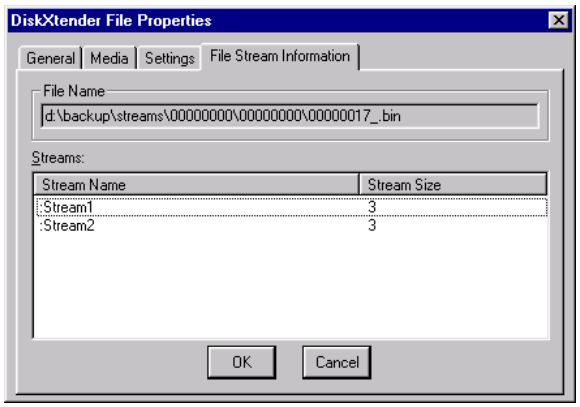
OPTION:	DESCRIPTION:
File Name	The name of the file for which properties are currently displayed.
Migration Status	This value indicates whether the file is Fetched (file data is present on the extended drive) or Purged (file tag is present on the extended drive but file data has been purged to media).
Purge File Data	If the Migration Status indicates the file is Fetched, the Purge File Data button is active. Select this button to purge data from the file, leaving a file tag on the extended drive and the file data on media. This command can only be used on files with a current Migration Status of Fetched.
Direct Read Setting	Enabled - When the direct read attribute is enabled for a file, that file is read directly from media when it is retrieved, rather than being fetched to the extended drive. Disabled - When the direct read attribute is disabled, the file is fetched to the extended drive and opened from there.

File Properties - File Stream Information Tab

The File Stream Information tab only appears if the file whose properties you selected to view is made up of file streams. File streams occur when an operating system is designed to save different “parts” of a file (file attributes, properties, file

data) separately into segments called "streams." Currently, file streams relate primarily to Macintosh platform files that have been saved to NT.

Figure 207: File Properties – File Stream Information Tab



The following table describes each option on the File Stream Information tab:

Table 28: File Properties Dialog Box: File Stream Information Tab

OPTION:	DESCRIPTION:
File Name	The name of the file for which properties are currently displayed.
Stream Name	The name of each stream within the file for which properties are currently displayed.
Stream Size	The size of each stream within the file for which properties are currently displayed.

To view DX file properties through the wizard:

1 There are two ways to open the Shell Extensions Wizard:

- Right-click any file in Explorer and select DISKXTENDER Shell Wizard from the DISKXTENDER option on the shortcut menu.
- Select the Shell Xtensions Wizard option from the OTG DISKXTENDER program group accessible through the Start menu.

The Shell Extensions Wizard opens.

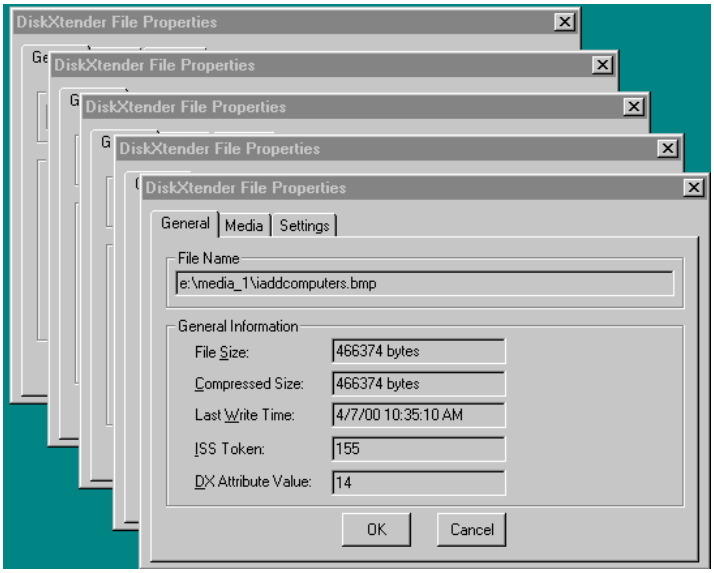
2 Select File Properties – Display file properties for selected files or folders. The Select Files page appears.

3 Select files and options using the functions described in Table 24 on page 196.

4 Click Next. The Summary page appears. Review the information in the summary page. Click Back to change any of the information entered.

5 If the summary information is correct, click Finish. The DISKXTENDER File Properties dialog box or dialog boxes appear, containing properties for the selected files. If you have selected to view properties for multiple files, a separate Properties dialog box will appear for each selected file, and those boxes will be cascaded on the screen.

Figure 208: Multiple Files - File Properties Dialog Boxes



NOTE

You may only view the properties for up to 15 files at one time. If you select more than 15 files, you will receive a message box informing you of this limitation, and the first 15 file Properties dialog boxes will appear.

To view DX file properties through the shortcut menu:

1 In the Windows Explorer, select one or more files and folders.

2 Right-click on any of the selected files to open the shortcut menu.

3 From the shortcut menu, select the DISKXTENDER option and then select View File Properties.

The DISKXTENDER File Properties dialog box or dialog boxes appear, containing properties for the selected files. If you have selected to view properties for multiple files, your Properties dialog boxes will appear cascaded on the screen (see Figure 208 above).

FILE REPORTS

You can use DX Explorer Add-ons to run a file report on one or more files and folders. The File Report function allows you to choose whether to run a Full Detail

or a Summary report, and whether to report on All Files selected or only those files managed by DISKXTENDER.

The information contained in a Summary report includes:

Table 29: Summary File Report Information

FILE DATA:	DESCRIPTION:
File Name	Name of the file
File Size	Size of the file (in bytes)
File Date	Date and time the file was last accessed and saved
Media Name	Label of the media where the file is stored
Status	Whether the file is currently Fetched to the extended drive or Purged (only file tag exists on the extended drive)
DR	Indicates whether Direct Read is enabled for this file or not

The information contained in a Full Detail report includes:

Table 30: Full Detail File Report Information

FILE DATA:	DESCRIPTION:
Filename	Full name of the file (including directory information)
File Size	Size of the file (in bytes)
File Date	Date and time the file was last accessed and saved
Media Name	Label of the media where the file is stored. Also indicates whether that media is online or offline.
Media Type	Type of media where the file is stored
File System	File System used on the media where the file is stored
Hardware Type	Type of hardware storing the media where the file is stored
Status	Whether the file is currently Fetched to the extended drive or Purged (only file tag exists on the extended drive)
DR	Indicates whether Direct Read is enabled for this file or not

NOTE

Where applicable, the file report indicates which files are not managed by DISKXTENDER in place of the media information provided for the report.

To run a DX file report through the wizard:

1 There are two ways to open the Shell Extensions Wizard:

- Right-click any file in Explorer and select DISKXTENDER Shell Wizard from the DISKXTENDER option on the shortcut menu.
- Select the Shell Xtensions Wizard option from the OTG DISKXTENDER program group accessible through the Start menu.

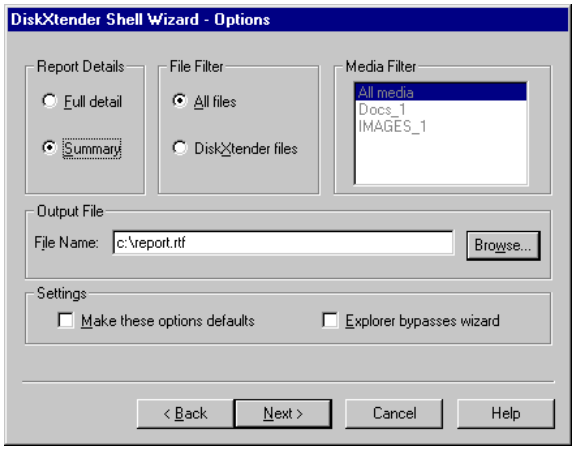
The Shell Extensions Wizard opens.

2 Select Reports – Generate file reports for selected files or folders and click Next. The File Selection window appears.

3 Select files and options using the functions described in Table 24 on page 196.

4 Click Next. The File Report Options page appears.

Figure 209: File Report Options Page



The File Report Options page allows you to configure report details. The options on the Report Options page are as follows:

Table 31: DX File Report Configuration Options

OPTION:	DESCRIPTION:
Report Details	Select Full detail to provide a detailed file report; select summary to report only summary file information.
File Filter	Select All Files to report on all files; select DISKXTENDER files to report on only DX files. Selecting DISKXTENDER files activates the Media Filter option.
Media Filter	This option is only active if DISKXTENDER files are selected under File Filter. Select media in the list to specify media on which the report should be performed. You can select All media to choose all DX media on the extended drive.

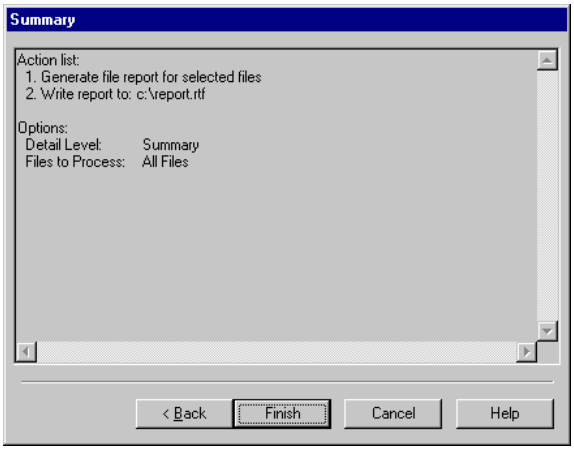
OPTION:	DESCRIPTION:
File Name	Configure a location for the output report file.
Browse	Click to browse for a location for the output report file.
Make these options defaults	This option is disabled by default. Enable this option to use the selected Report Details, File Filter, Media Filter and File Name options as defaults each time you generate a report.
Explorer bypasses wizard	This option is disabled by default. Enabling this option allows you to bypass this options page when running a report using the shortcut menu (see shortcut menu procedures below).

NOTE

If you enable the Explorer bypasses wizard option, the default settings will be used. These default settings are the system defaults unless you have changed the default settings by enabling the Make these options defaults function in this window.

5 Configure your DX File Report options as necessary and click Next. The Summary page appears.

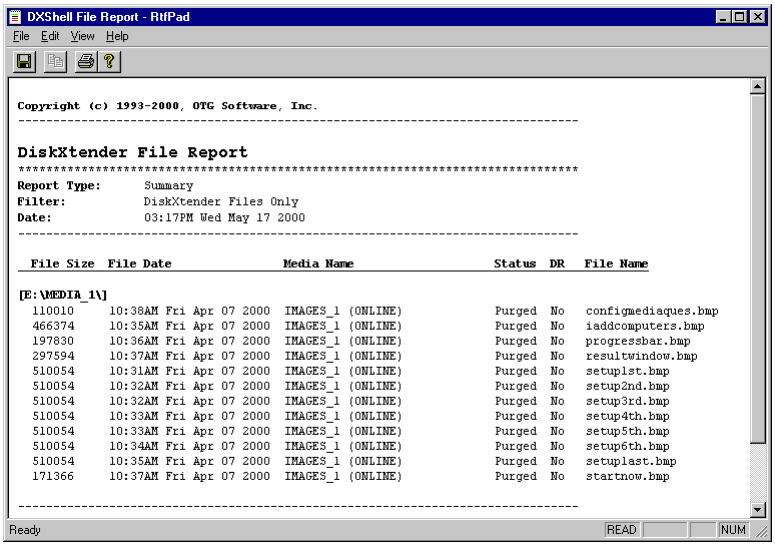
Figure 210: File Report Summary Page



6 Review the information in the summary page. Click Back to change any of the information entered.

7 If the summary information is correct, click Finish. The report is created and the File Report appears on your screen in RtfPad.

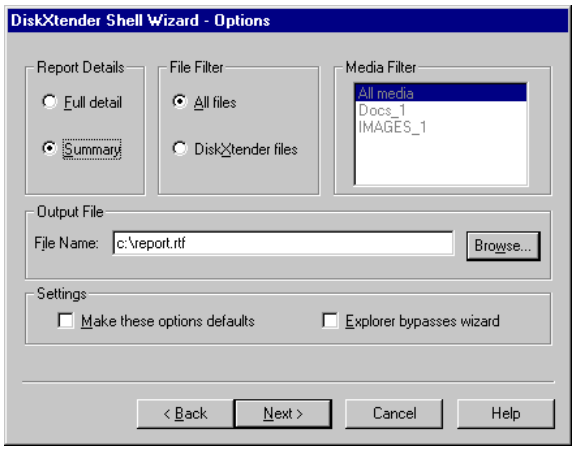
Figure 211: RtfPad File Report Window



To run a DX file report using the shortcut menu:

1. In the Windows Explorer, select multiple files or single or multiple folders.
2. Right-click on any of the selected files to open the shortcut menu.
3. From the shortcut menu, select the DISKXTENDER option and then select File Report. The File Report Options page appears.

Figure 212: File Report Options Page



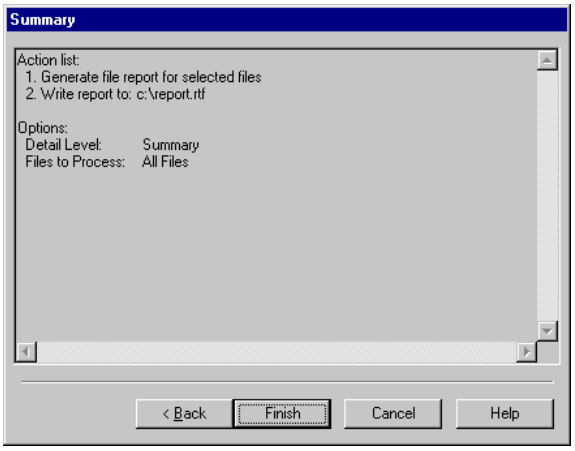
The File Report Options page allows you to configure report details. The options on the Report Options page are as follows:

Table 32: DX File Report Configuration Options

OPTION:	DESCRIPTION:
Report Details	Select Full detail to provide a detailed file report; select summary to report only summary file information.
File Filter	Select All Files to report on all files; select DISKXTENDER files to report on only DX files. Selecting DISKXTENDER files activates the Media Filter option.
Media Filter	This option is only active if DISKXTENDER files are selected under File Filter. Select media in the list to specify media on which the report should be performed. You can select All media to choose all DX media on the extended drive.
File Name	Configure a location for the output report file.
Browse	Click to browse for a location for the output report file.
Make these options defaults	Select Make these options defaults to use these options as defaults each time you generate a report.
Explorer bypasses wizard	Enabling this option allows you to bypass this options page when running a report using the shortcut menu.

4 Configure your DX File Report options as necessary and click Next. The Summary page appears.

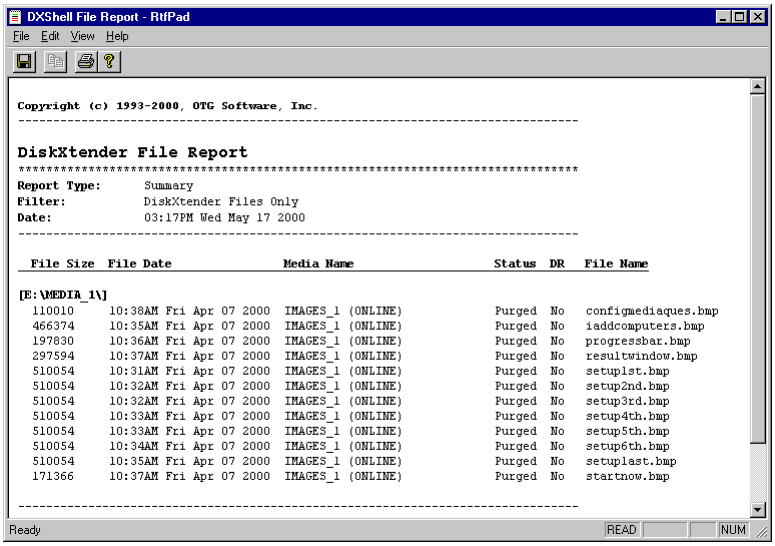
Figure 213: File Report Summary Page



5 Review the information in the summary page. Click Back to change any of the information entered.

6 If the summary information is correct, click Finish. The report is created and the File Report appears on your screen in RtfPad.

Figure 214: RtfPad File Report Window



NOTE

If you have previously enabled the Explorer bypasses wizard option in the File Report Options page, the report will automatically be run on the selected files when the File Report option is selected from the shortcut menu. To disable this option, you must run a report through the Shell Xtensions Wizard, and uncheck the option in the Options page.

DIRECT READ

You can enable and disable direct read for DX files and folders using the DX Explorer Add-ons. The Direct Read attribute on a file means that the file will always be read from the media when requested by a client, rather than being fetched to the extended drive first.

NOTE

Direct read can only be set for DISKXTENDER files. If you select any non-DISKXTENDER files (or folders containing non-DISKXTENDER files), the operation will fail and the direct read attribute will not be changed for any files.

To enable or disable direct read through the wizard:

1 There are two ways to open the Shell Extensions Wizard:

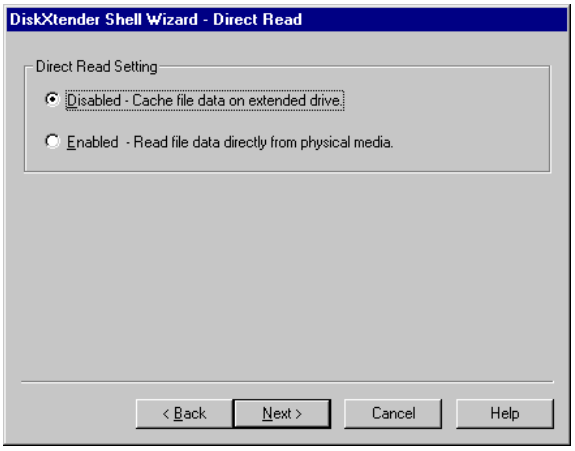
- Right-click any file in Explorer and select DISKXTENDER Shell Wizard from the DISKXTENDER option on the shortcut menu.
- Select the Shell Xtensions Wizard option from the OTG DISKXTENDER program group accessible through the Start menu.

The Shell Extensions Wizard opens.

2 Select Direct Read – Set direct read option for selected files or folders and click Next. The File Selection window appears.

3 Select files and options using the functions described in Table 24 on page 196. Click Next. The Direct Read Setting page appears.

Figure 215: Direct Read Settings Page



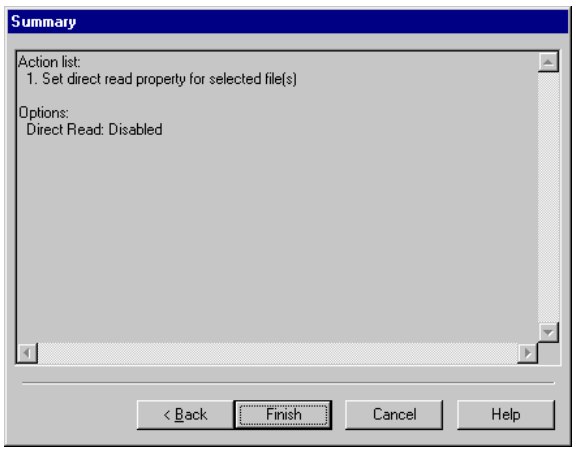
4 Select to Enable or Disable direct read for the files selected.

Table 33: DISKXTENDER File Properties: Settings Tab: Direct Read Setting

OPTION:	DESCRIPTION:
Disabled	When the direct read attribute is disabled, the file is fetched to the extended drive and opened from there.
Enabled	When the direct read attribute is enabled for a file, that file is read directly from media when it is retrieved, rather than being fetched to the extended drive.

5 Click Next. The Summary Page appears.

Figure 216: Direct Read Summary Page



6 Review the information in the Summary page. If it is correct, click Finish. A confirmation message appears, verifying that you want to enable or disable the Direct Read attribute for the files chosen.

Figure 217: Enable Direct Read Verification Message

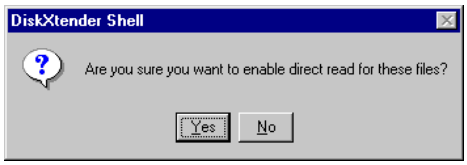


Figure 218: Disable Direct Read Verification Message

7 Click Yes. The selected Direct Read setting is applied to the selected files.

NOTE

You can also enable or disable the Direct Read attribute through the Settings tab of the File Properties dialog box. For information, see *File Properties - Settings Tab* on page 202.

To enable or disable direct read through the shortcut menu:

1 In the Windows Explorer, select one or more files or folders.

2 Right-click on any of the selected files to open the shortcut menu.

3 From the shortcut menu, select the DISKXTENDER option and then select Enable Direct Read or Disable Direct Read as appropriate.

A confirmation message appears, verifying that you want to enable or disable the Direct Read attribute for the files chosen.

Figure 219: Enable Direct Read Verification Message

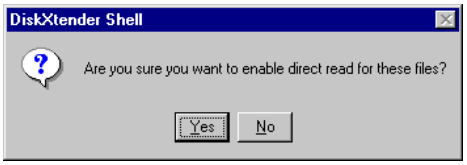
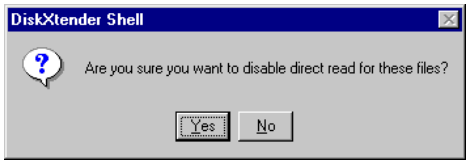


Figure 220: Disable Direct Read Verification Message



4 Click Yes. The selected Direct Read setting is applied to the selected files.

NOTE

You can also enable or disable the Direct Read attribute through the Settings tab of the File Properties dialog box. For information, see *File Properties - Settings Tab* on page 202.

PURGE FILES

The Purge files function allows you to select and manually purge DX files from your extended drive on a one-time basis, independent of the purge rules for your extended drive. Purging files truncates the file data on the extended drive, leaving a file tag that points to the (complete) file on the media.

To purge DX Files through the wizard:

1 There are two ways to open the Shell Extensions Wizard:

- Right-click any file in Explorer and select DISKXTENDER Shell Wizard from the DISKXTENDER option on the shortcut menu.
- Select the Shell Xtensions Wizard option from the OTG DISKXTENDER program group accessible through the Start menu.

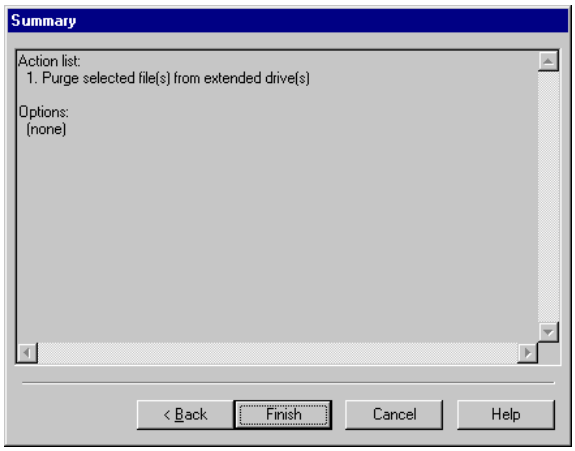
The Shell Extensions Wizard opens.

2 Select Purge Files – Purge file data for selected files or folders and click Next. The File Selection window appears.

3 Select files and options using the functions described in Table 24 on page 196.

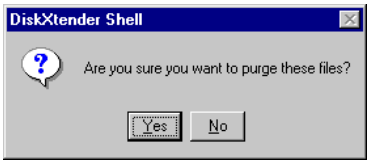
4 Click Next. The Summary Page appears.

Figure 221: Purge Files Summary Page



5 Review the information in the Summary page. If it is correct, click Finish. A confirmation message appears, verifying that you want to purge the selected files.

Figure 222: Purge Files Verification Message



6 Click Yes. The selected files are purged.

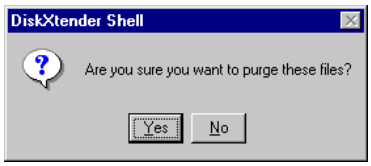
To purge files using the shortcut menu:

1 In the Windows Explorer, select one or more files or folders.

2 Right-click on any of the selected files to open the shortcut menu.

3 From the shortcut menu, select the DISKXTENDER option and then select Purge Files. A confirmation message appears, verifying that you want to purge the selected files.

Figure 223: Purge Files Verification Message



4 Click Yes. The selected files are purged.

CHAPTER EIGHT

REMOVING DX AND DX COMPONENTS

DISKXTENDER can be removed from the DX computer if necessary. When DX is removed, all configuration settings and system files are deleted. When reinstalled, new settings must be configured. Caution should be taken when removing the product, as all settings are permanently lost.

THE DX Setup program, accessed through the OTG DISKXTENDER program group in the Windows start menu, provides a wizard that takes you step by step through the uninstall process. However, DISKXTENDER requires that you remove several key components before you attempt to uninstall the program. If you run the DX Setup wizard to uninstall DX before removing these components, the wizard will display a message stating you must remove these items from your DISKXTENDER configuration before uninstalling the program.

This chapter includes a list of actions necessary before uninstalling DX and procedures for completing each of those actions. In addition, you will find instructions on running the Setup Wizard to uninstall the DISKXTENDER program, the DISKXTENDER Remote Administrator and the DISKXTENDER Explorer Add-Ons.

NOTE

You may use the Repair Disk function to create a copy of your DX configuration and restore that configuration after uninstalling and reinstalling DISKXTENDER if appropriate. For more information on using the Repair Disk function, see *Chapter Four: DX Computer Administration* on page 75.

PREPARING FOR UNINSTALLING DISKXTENDER

In preparation for removing DISKXTENDER, you must remove all existing extended drives (and any media folders and any media in the media folders on those extended drives) and force a drive scan to update the affected Windows settings. Before

running Setup to uninstall DISKXTENDER, make sure you have completed the actions listed below. Instructions for completing each action appear after the list.

For your convenience, the setup wizard allows you to uninstall DISKXTENDER from multiple computers at once. To take advantage of this feature, you may want to determine which computers are to have DISKXTENDER removed from them before you run the setup wizard, enabling you to run the wizard once rather than multiple times. You still have to perform the preparation steps below on each computer from which you are removing DISKXTENDER, so you need to prepare each computer from which you will be removing DX prior to running the Setup Wizard.

To prepare for removing DX:

1. Delete any scheduled media tasks.
2. Remove media from each media folder.
3. Force drive scans for each extended drive.
4. Delete each extended drive.
5. Remove all media services.
6. Reboot each DX computer.
7. If configured for Automatic Startup, stop the DX service after reboot.

NOTE

The above steps are only necessary if you are removing the DISKXTENDER program itself. The preparation steps do not apply if you are uninstalling the Remote Administrator or the Explorer Add-Ons.

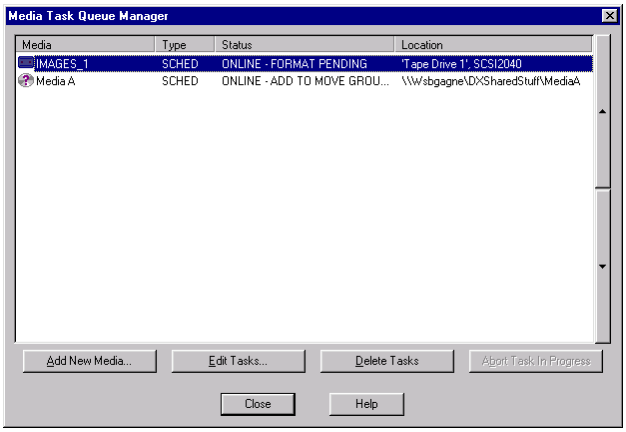
DELETING SCHEDULED MEDIA TASKS

The Media Task Queue Manager lists all media that have assigned tasks ready to be performed and allows you to abort any tasks currently in progress and delete all scheduled tasks for media on the extended drive.

To access the media task manager:

➲ With any item in the extended drive tree selected, select Media Task Manager from the Tools menu. The Media Task Queue Manager appears.

Figure 224: Media Task Queue Manager



NOTE

The Media Task Queue Manager is specific to each extended drive. If you have more than one extended drive configured for your DX system, make sure you delete all tasks for media on all extended drives.

Canceling a Task in Progress

Logically, you cannot delete a task if it is already in progress. The task in progress must be canceled or aborted first. Then the remaining task(s) for the media can be deleted.

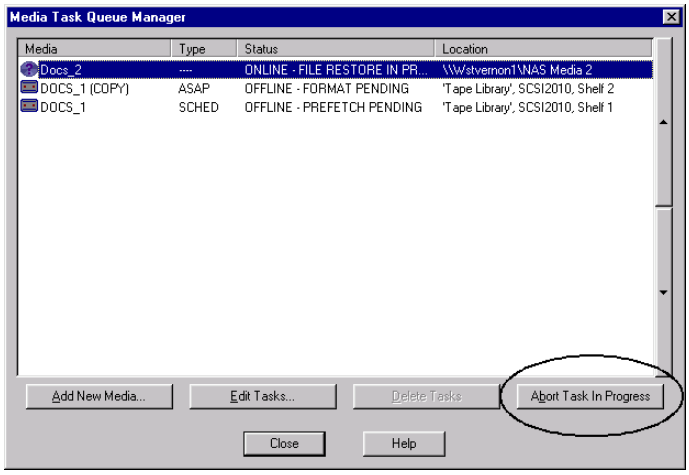
NOTE

The Format task cannot be canceled or aborted once it is in progress.

To stop a task already in process:

1 Select the media in the queue and click the Abort Task in Progress button.

Figure 225: Abort Task In Progress Button



A message appears, prompting you to confirm that the task should be stopped.

2 Click Yes. The task is stopped (and removed).

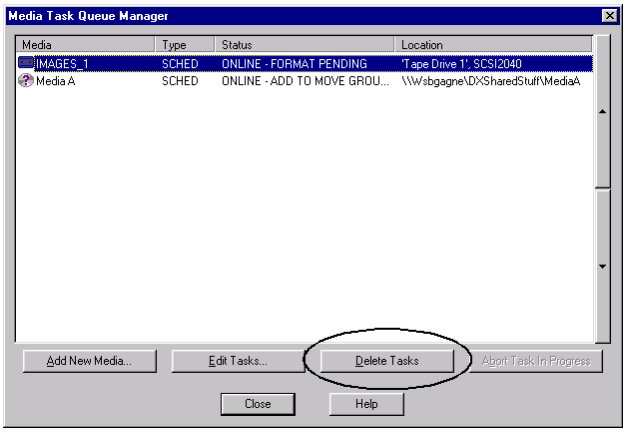
Deleting Scheduled Media Tasks

You can remove all pending tasks for media through the Media Task Manager dialog box. When you use the Delete Tasks button, all tasks are deleted and the media is removed from the queue.

To delete tasks for media:

1 Select the media in the queue and click the Delete Tasks button.

Figure 226: Media Task Queue Manager



A message appears, confirming that all tasks should be deleted for the piece of media.

2 Click Yes. All tasks are deleted and the media is removed from the queue. Repeat this for all media listed in the queue.

NOTE

The Media Task Manager is specific to each extended drive. If you have more than one extended drive configured for your DX system, make sure you delete all tasks for media on all extended drives.

REMOVING MEDIA FROM MEDIA FOLDERS

In order to remove media from a media folder, all pending media tasks for the media must first be deleted, or if in progress, stopped. If media has a task in progress that cannot be aborted, it cannot be removed until the task completes.

Files that are on the media are not affected when the media is removed; however, those files are removed from the extended drive. In the tree view, media that is removed from a media folder reappears in the Available Media tree for the extended drive.

As stated, when media is removed from a media folder, files are removed from the folder on the NTFS volume only. No files are deleted from the actual media.

Using the Shortcut Menu

The shortcut menu available for each piece of media contains a Remove command that allows you to remove that piece of media. If the media has pending tasks, the remove command is grayed out. You cannot remove media until all pending tasks have processed or been deleted.

To remove a single piece of media from a media folder:

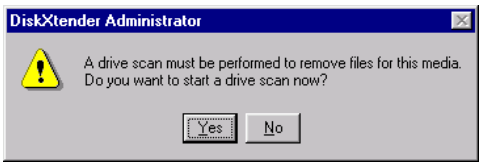
1 Right-click the piece of media you want to remove. A shortcut menu appears.

2 From the shortcut menu, select Remove. A message appears, verifying that you wish to remove the selected media.

3 Click Yes.

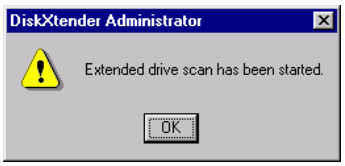
4 A message appears stating that the media will not be removed until a drive scan is run and asking if you would like to run a drive scan now.

Figure 227: Run Drive Scan Now Message



5 Click Yes. Another message appears stating that the drive scan has started.

Figure 228: Drive Scan Started Message



6 Click OK. Once the drive scan completes, the media is removed from the media folder and appears in the Available Media tree for the extended drive.

Using the Remove Media Wizard

The Remove Media Wizard allows you to remove multiple pieces of media from a media folder at once. The Remove Media wizard is accessed from the shortcut menu for the Media node under the media folder, or from the Edit menu or shortcut menu for the extended drive. You cannot remove media with pending tasks.

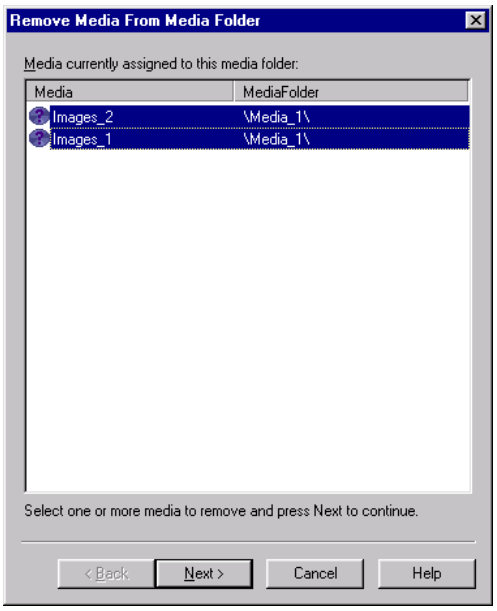
To remove multiple pieces of media from a media folder:

1 You have the following choices:

- Right-click the Media node under the appropriate media folder. A shortcut menu appears. From the shortcut menu, select Remove Media.
- Right-click the node for the extended drive. A shortcut menu appears. From the shortcut menu, select Remove Media from Media Folders.
- Select the extended drive and select the Remove Media from Media Folders option from the Edit menu.

The Remove Media From Media Folder page of the Remove Media wizard appears.

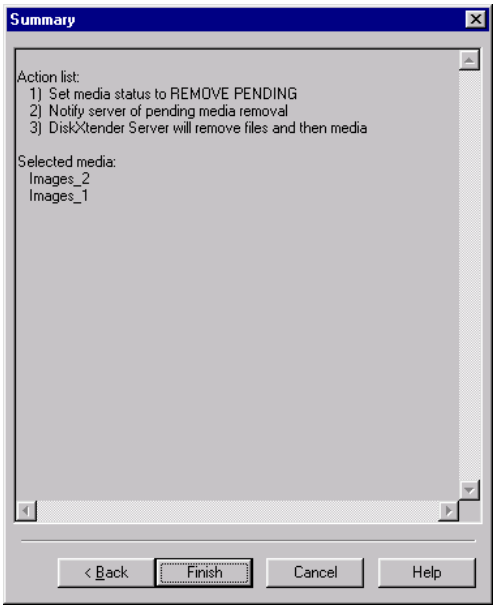
Figure 229: Remove Media From Media Folder Page



2 Select the media to be removed, and click Next. The Summary page appears.

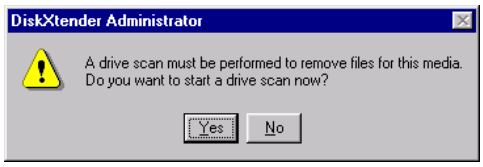
3 To remove the media from the media folder click Finish. DX verifies that the media does not have any pending media tasks. If the media has any pending media tasks, the attempt to remove the piece of media will fail.

Figure 230: Summary Page



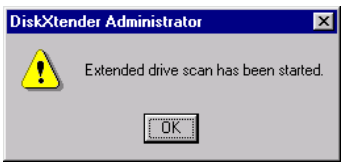
4 A message appears stating that a drive scan must be performed to finish removing the media and asking if you would like to run a drive scan now.

Figure 231: Run Drive Scan Now Message



5 Click Yes. Another message appears stating that the drive scan has started.

Figure 232: Drive Scan Started Message



6 Click OK. Once the drive scan completes, the media is removed from the media folder and appears in the Available Media tree for the extended drive.

DELETING MEDIA FOLDERS

When you delete a media folder, you delete all of the move groups and move, purge, and delete rules you have created for that folder. Media contained in the media folder must be removed before you can delete the folder. For instructions, see *Removing Media from Media Folders* on page 221.

You can delete each media folder individually or you can delete all the media folders at once.

Deleting a Single Media Folder

The shortcut menu available for each media folder contains a single Delete command. Use this to delete each media folder separately.

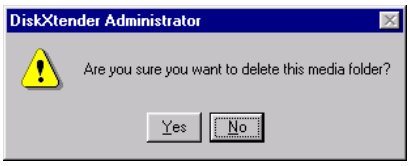
To delete individual media folders:

1 Right-click the media folder you want to remove. A shortcut menu appears consisting of one command: Delete.

2 Select the Delete command. A message appears, verifying that you wish to remove the selected media folder.

3 Click Yes. DX verifies that the media folder does not contain media and the media folder is removed from the extended drive.

Figure 233: Delete Media Folder Verification Message



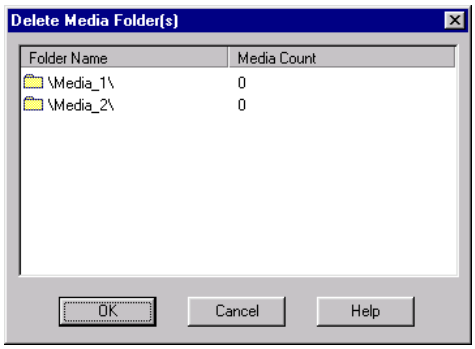
Deleting Multiple Media Folders

Both the Edit menu and the shortcut menu for the extended drive contain a command that will allow you to select and delete all media folders on that extended drive at once. Remember that all media must be removed from the media folders before they can be deleted from the extended drive.

To delete multiple media folders:

1. Expand the Media node(s) of the media folder to verify that all media has been removed from the media folder(s).
2. Right-click on the extended drive where the media folder is located or open the Edit menu and select Delete Media Folder. The Delete Media Folder dialog box appears.

Figure 234: Delete Media Folder Dialog Box



3. Select the folder(s) to be deleted, and click OK. The media folders are removed from the extended drive.

DELETING EXTENDED DRIVES

When an extended drive is deleted from DISKXTENDER, all associated components are deleted as well, to include all schedules and configured options for that extended drive. The media will still exist as part of the media service, and the media service must be removed separately. For instructions, see *Removing Media Services* on page 226.

All components of the extended drive should be deleted prior to deleting the extended drive. The only objects you should see in the tree view are the Extended drive and the Available Media nodes.

To delete an extended drive:

1 You have two choices:

- With the Extended Drive selected, select Delete Extended Drive from the Edit menu.
- Right-click the extended drive and select Delete Extended Drive.

A message appears, prompting you to verify deletion.

2 Click Yes. The extended drive and its components are deleted.

Once all of your extended drives are deleted, your administrator view will be empty.

REMOVING MEDIA SERVICES

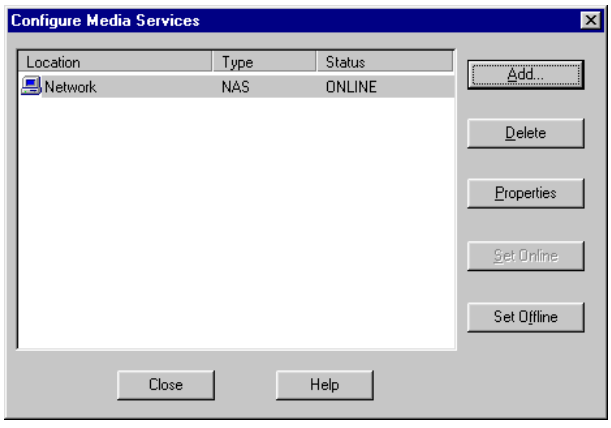
When your extended drives have been deleted, you will notice your Administrator window is empty. However, unless you have deleted them previously, your media services remain and must be deleted prior to uninstalling DISKXTENDER. Repeat the following procedure for each media service configured to DISKXTENDER.

To delete a media service:

1 Make sure that all NAS, OTGMS, and TSM media have been deallocated from extended drives.

2 From the Service menu of the Administrator select Configure Media services. The Configure Media Services dialog box appears.

Figure 235: Configure Media Services Dialog Box

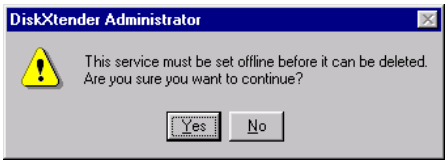


3 Select the media service from the list and click Delete. A verification message appears.

Figure 236: Delete Media Service Verification Message

4 Click Yes. If the media service is still online, a message appears stating the media service must be set offline to be deleted.

Figure 237: Delete Media Service Verification Message



5 Click Yes. The media service is deleted from your DX configuration and the Configure Media Services window reappears without the deleted service.

UNINSTALLING DISKXTENDER

Once you have completed the steps listed in the *Preparing for Uninstalling DISKXTENDER* section on page 217 for each computer from which you will be removing the DISKXTENDER program, while it is not required, it is recommended that you restart each computer.

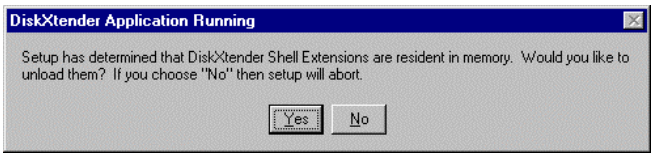
After restarting the computer(s), you are now ready to uninstall DISKXTENDER. The same DX Setup wizard that installed the program can be used to uninstall the program. Because the setup wizard allows you uninstall DISKXTENDER from multiple computers at once, you may want to determine which computers are to have DISKXTENDER removed from them before you run the setup wizard, enabling you to run the wizard once rather than multiple times.

DX Setup is a wizard that leads you through the necessary steps for removing DISKXTENDER. The Next button continues to the following step; the Back button (when active) returns to the preceding step. The Cancel button exits Setup, canceling the process.

To remove DX:

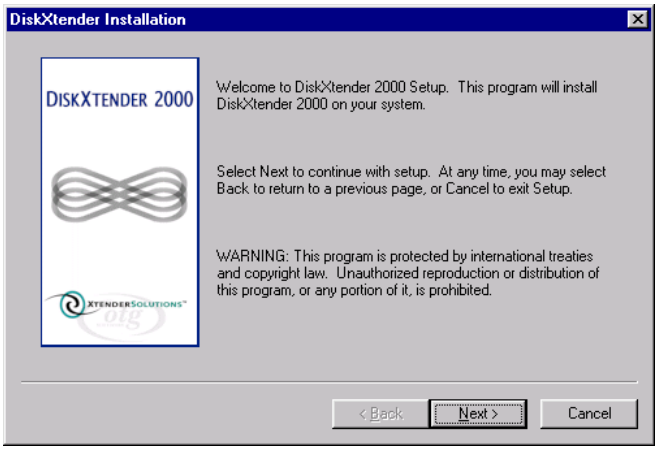
1 Select Setup from the OTG DISKXTENDER program group accessed through the Start menu. The Shell Extensions warning box appears.

Figure 238: Extensions Warning Dialog Box



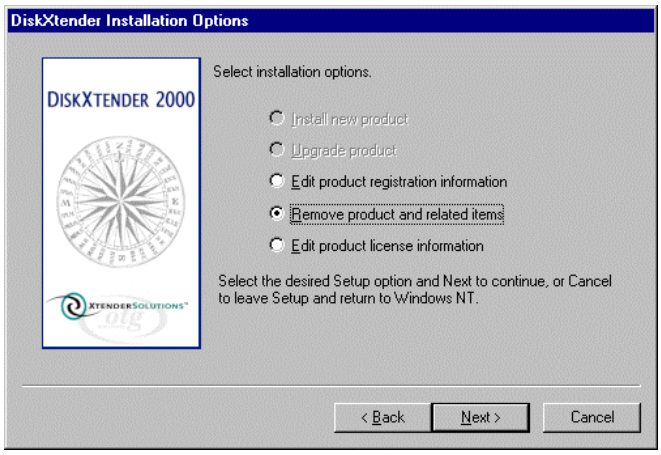
2 Click Yes to remove the DISKXTENDER Shell Extensions from memory. The DISKXTENDER Setup wizard appears, starting with the DISKXTENDER Installation page.

Figure 239: DX Removal: DISKXTENDER Installation Page



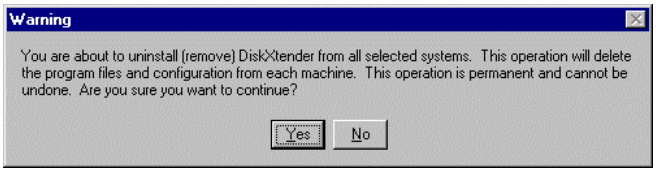
3 Click Next. The DISKXTENDER Installation Options page appears.

Figure 240: DX Removal: DISKXTENDER Installation Options Page



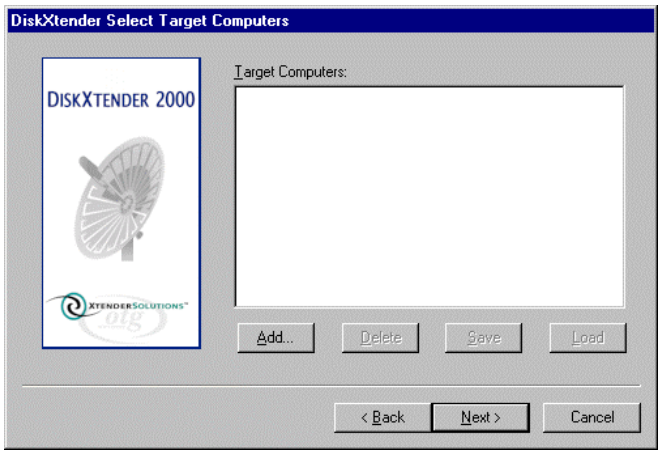
4 Select the Remove product and related items option and then click Next. A warning appears informing you that Uninstalling cannot be undone.

Figure 241: Uninstall Warning Message



5 Click Yes to continue. The Select Target Computers page appears with the local computer already listed in the Target Computers list.

Figure 242: DX Removal: Select Target Computers Page

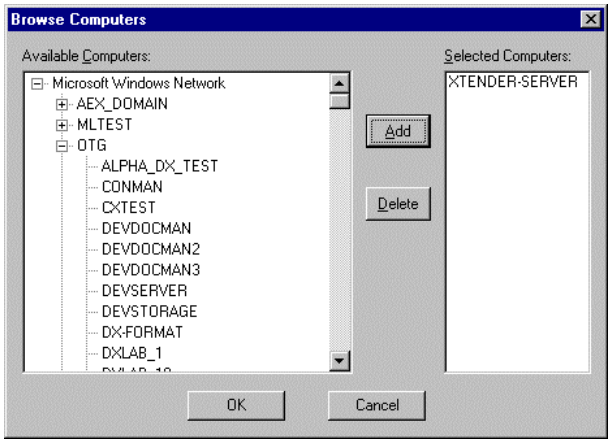


NOTE

If you have other computers registered through the DX Administrator, those computers will also appear in the initial Target Computers list.

6 If you want to remove DX from other computers, click Add. The Browse Computers dialog box appears.

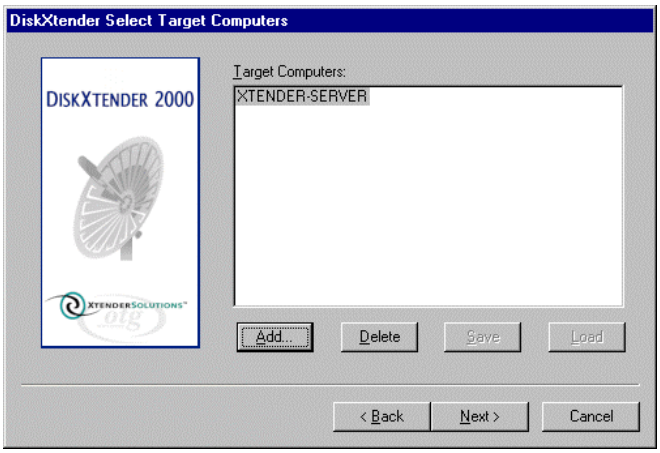
Figure 243: DX Setup: Browse Computers Dialog Box



7 Under Available Computers, navigate to and select the computer from which you want to remove DX. Click Add. The computer you have selected is listed under Selected Computers. Repeat this step for each additional computer from which you want to remove DX.

8 Click OK. You are returned to the Select Target Computers page.

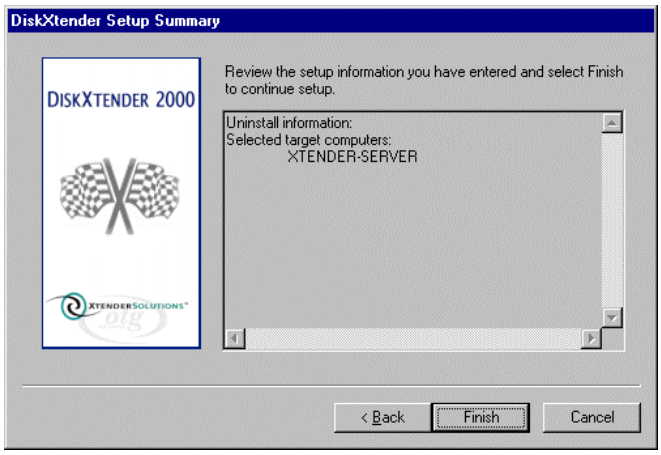
Figure 244: DX Removal: Select Target Computers Page



9 Carefully review the list of target computers. Remove any computers in the list for which you do not want DX uninstalled by selecting the computer and clicking Delete.

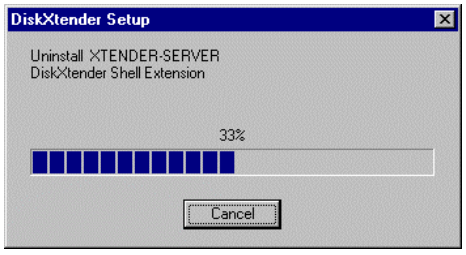
10 When the list of target computers for removing DX is correct, click Next. The Summary page appears, listing the target computers from which DX will be removed.

Figure 245: DX Removal: Summary Page



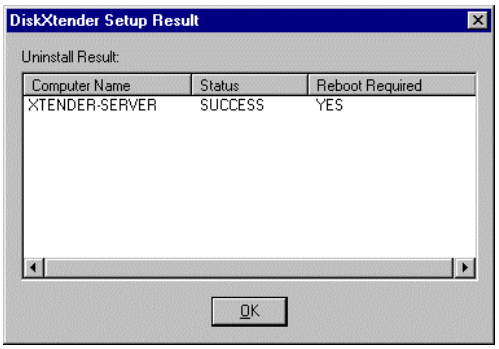
11 Click Finish to complete uninstalling DX. A progress bar appears indicating the completion percentage of the removal process. If you are uninstalling from multiple DX computers, separate progress bars will subsequently appear indicating the percentage complete for the program removal from each computer.

Figure 246: DX Removal: Progress Bar



Any settings related to DX in the Windows NT/2000 registry, all program files in the installation path, and the DISKXTENDER program group/folder are removed. When uninstalling is complete, the DISKXTENDER Setup Results dialog box appears, listing the results for each target computer specified.

Figure 247: DISKXTENDER Removal Results Dialog Box



12 Take note of any computers that need to be rebooted (or computers on which the uninstall failed). Click OK.

13 Restart each computer for which the DISKXTENDER Setup Results dialog box indicates a reboot is required.

REMOVING DISKXTENDER REMOTE ADMINISTRATOR

DISKXTENDER Remote Administrator can be removed from a machine if necessary. Removing the Administrator from a remote machine does not affect the DX machine to which it points. Only the system files for the remote Administrator and Service Manager are deleted. This means you do not need to perform the preparation steps necessary for uninstalling the DISKXTENDER program itself.

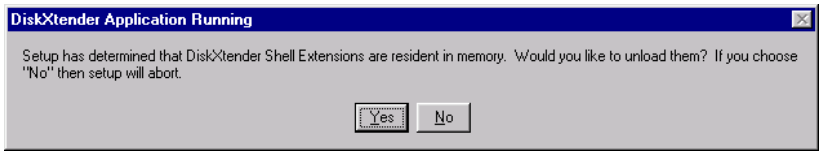
The same Remote Administrator Setup wizard that installed the program can be used to uninstall the program. Because the setup wizard allows you uninstall the Remote Administrator from multiple computers at once, you may want to determine which computers are to have the Administrator removed from them before you run the setup wizard, enabling you to run the wizard once rather than multiple times.

DX Remote Administrator Setup is a wizard that leads you through the necessary steps for removing the Remote Administrator. The Next button continues to the following step; the Back button (when active) returns to the preceding step. The Cancel button exits Setup, canceling the process.

To remove DX remote administrator:

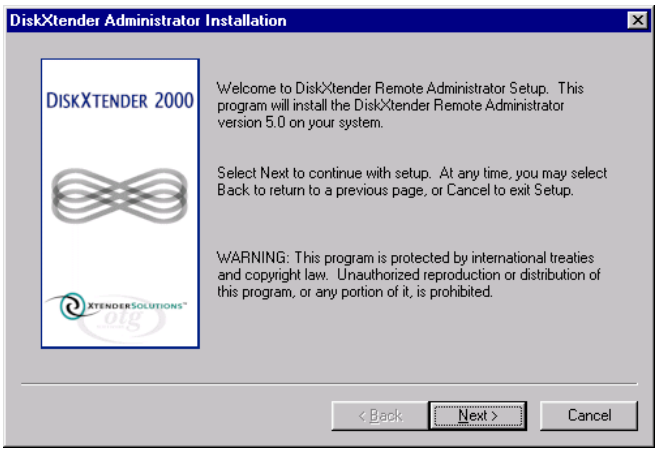
1 Select Setup from the OTG DISKXTENDER Administrator program group accessed through the Start menu. The Shell Extensions warning box appears.

Figure 248: Shell Extensions Warning Dialog Box



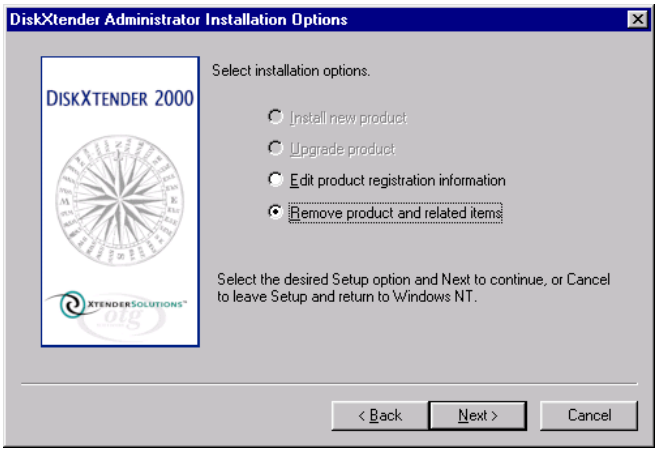
2 Click Yes. The Setup Wizard opens with the Administrator Installation page.

Figure 249: Remote Administrator Removal: Installation Page



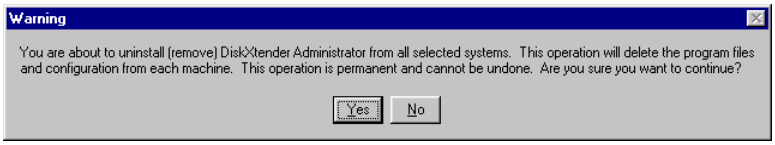
3 Click Next. The Administrator Installation Options page appears.

Figure 250: Remote Administrator Removal: Installation Options Page



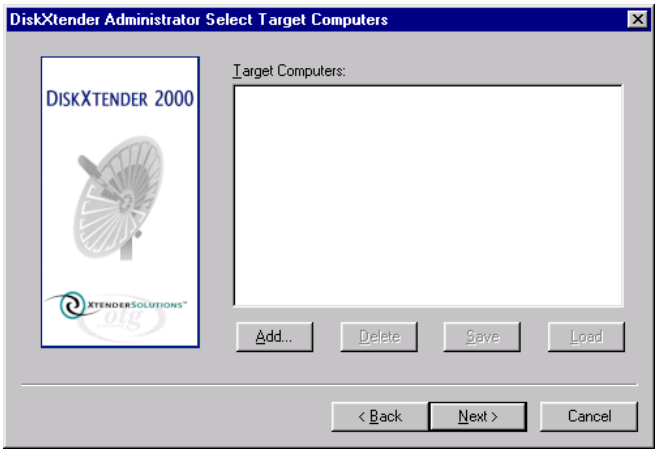
4 Select the Remove product and related items option and then click Next. A warning appears informing you that Uninstalling cannot be undone.

Figure 251: Uninstall Warning Message



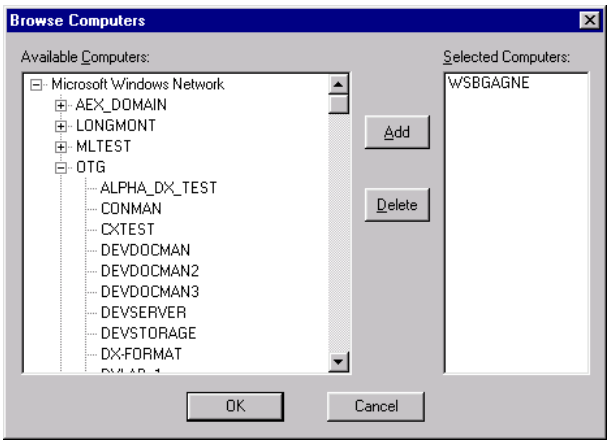
5 Click Yes to continue. The Select Target Computers page appears with the local computer already listed in the Target Computers list.

Figure 252: Remote Administrator Removal: Select Target Computers Page



6 If you want to remove the Remote Administrator from other computers, click Add. The Browse Computers dialog box appears.

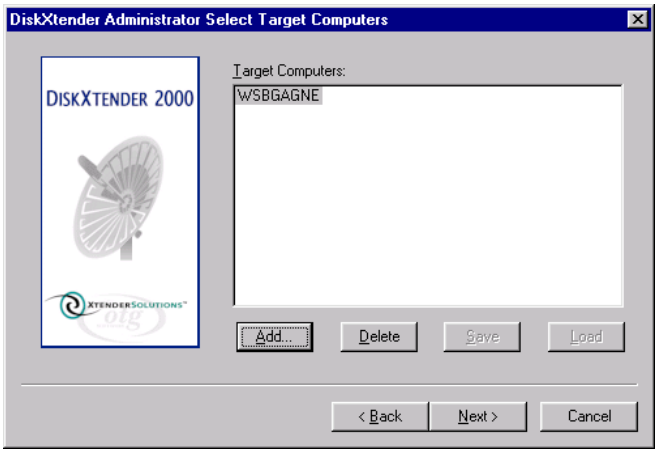
Figure 253: Remote Administrator Removal: Browse Computers Dialog Box



7 Under Available Computers, navigate to and select the computer from which you want to remove the Remote Administrator. Click Add. The computer you have selected is listed under Selected Computers. Repeat this step for each additional computer from which you want to remove the Administrator.

8 Click OK. You are returned to the Select Target Computers page.

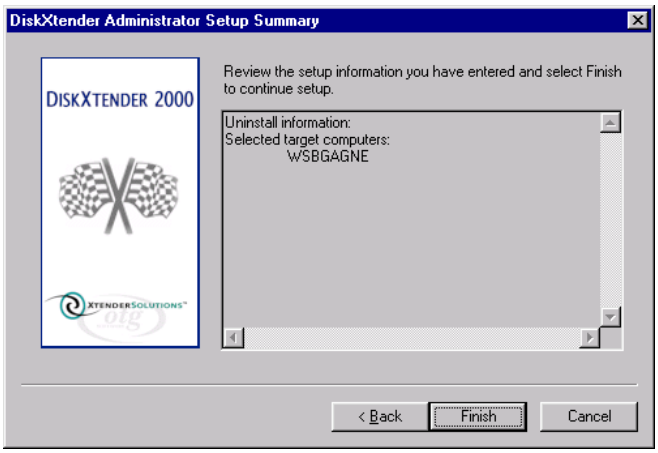
Figure 254: Remote Administrator Removal: Select Target Computers Page



9 Carefully review the list of target computers. Remove any computers in the list for which you do not want the Remote Administrator uninstalled by selecting the computer and clicking Delete.

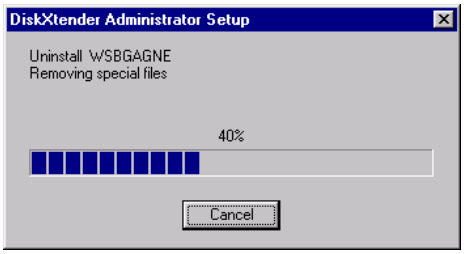
10 When the list of target computers for removing the Administrator is correct, click Next. The Summary page appears listing the target computers from which the Remote Administrator will be removed.

Figure 255: Remote Administrator Removal: Summary Page



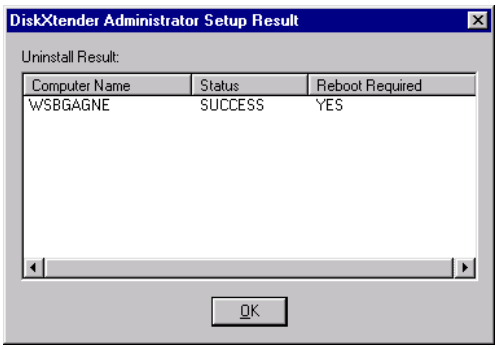
11 Click Finish to complete uninstalling Remote Administrator. A progress bar appears indicating the completion percentage of the removal process. If you are uninstalling from multiple computers, separate progress bars will subsequently appear indicating the percentage complete for the program removal from each computer.

Figure 256: Remote Administrator Removal: Progress Bar



Any settings related to the Remote Administrator in the Windows NT registry, all program files in the installation path, and the DISKXTENDER ADMINISTRATOR program group/folder are removed. When uninstall is complete, the Administrator Setup Results dialog box appears, listing the results for each target computer specified.

Figure 257: Administrator Removal Results Dialog Box



12 Take note of any computers that need to be rebooted (or computers on which the uninstall failed). Click OK.

13 Restart each computer for which the Administrator Setup Results dialog box indicates a reboot is required.

REMOVING DISKXTENDER EXPLORER ADD-ONS

DISKXTENDER Explorer Add-ons can be removed from a machine if necessary. Removing the Explorer Add-ons from a machine does not affect the DX service. Only the system files for the Explorer Add-ons are deleted. This means you do not

need to perform the preparation steps necessary for uninstalling the DISKXTENDER program itself.

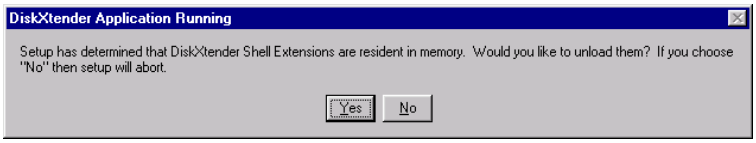
The same DISKXTENDER Explorer Add-Ons Setup wizard that installed the program can be used to uninstall the program. Because the setup wizard allows you uninstall the Explorer Add-Ons from multiple computers at once, you may want to determine which computers are to have the Explorer Add-Ons removed from them before you run the setup wizard, enabling you to run the wizard once rather than multiple times.

DISKXTENDER Explorer Add-Ons Setup is a wizard that leads you through the necessary steps for removing the Explorer Add-Ons. The Next button continues to the following step; the Back button (when active) returns to the preceding step. The Cancel button exits Setup, canceling the process.

To remove DX Explorer Add-Ons:

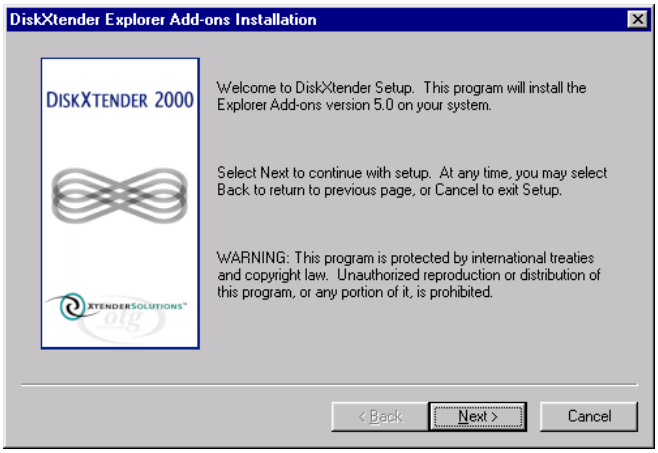
1 Select Setup from the OTG DISKXTENDER Explorer Add-Ons program group accessed through the Start menu. The Shell Extensions warning box appears.

Figure 258: Shell Extensions Warning Dialog Box



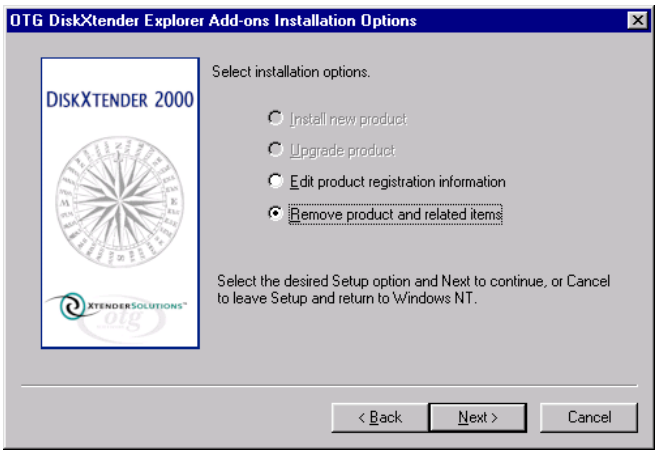
2 Click Yes. The Setup Wizard opens with the Explorer Add-Ons Installation page.

Figure 259: Explorer Add-ons Removal: Installation Page



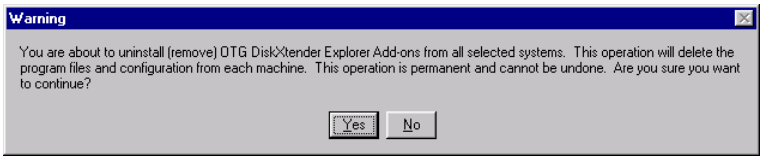
3 Click Next. The Explorer Add-Ons Installation Options page appears.

Figure 260: Explorer Add-ons Removal: Installation Options Page



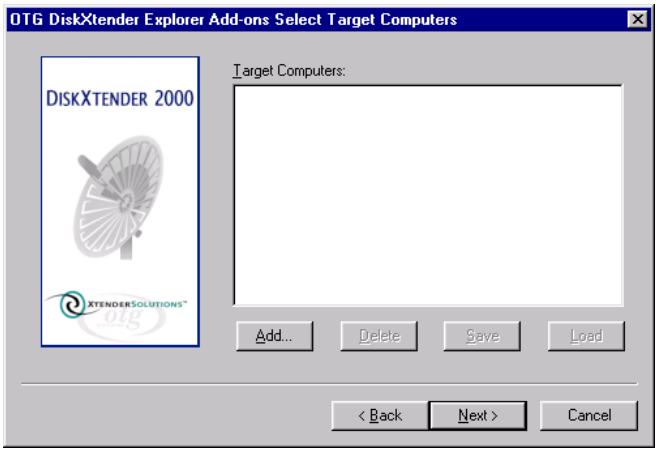
4 Select the Remove product and related items option and then click Next. A warning appears informing you that Uninstall cannot be undone.

Figure 261: Uninstall Warning Message



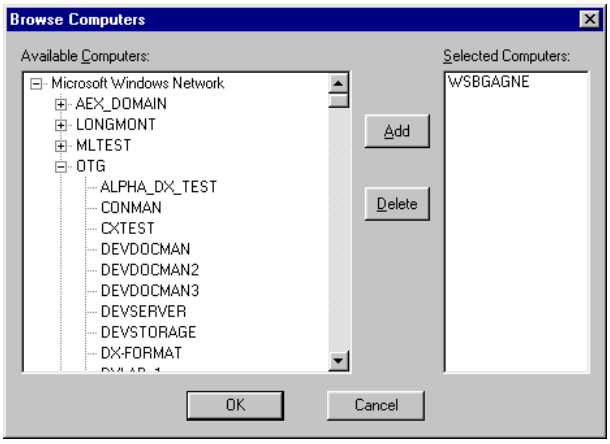
5 Click Yes to continue. The Select Target Computers page appears with the local computer already listed in the Target Computers list.

Figure 262: Explorer Add-ons Removal: Select Target Computers Page



6 If you want to remove the Explorer Add-Ons from other computers, click Add. The Browse Computers dialog box appears.

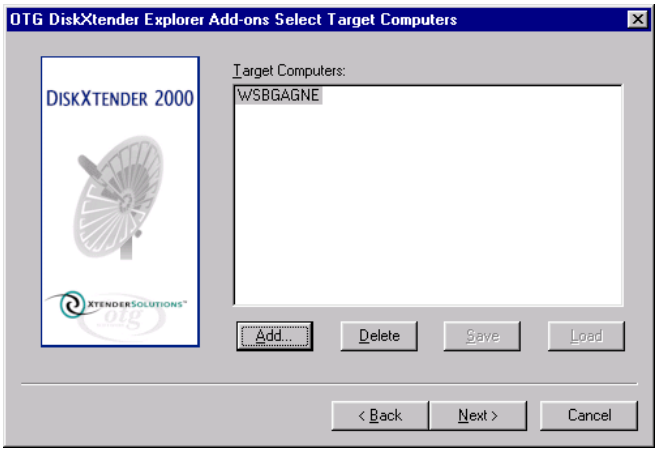
Figure 263: Explorer Add-ons Removal: Browse Computers Dialog Box



7 Under Available Computers, navigate to and select the computer from which you want to remove the Explorer Add-Ons. Click Add. The computer you have selected is listed under Selected Computers. Repeat this step for each additional computer from which you want to remove the Explorer Add-Ons.

8 Click OK. You are returned to the Select Target Computers page.

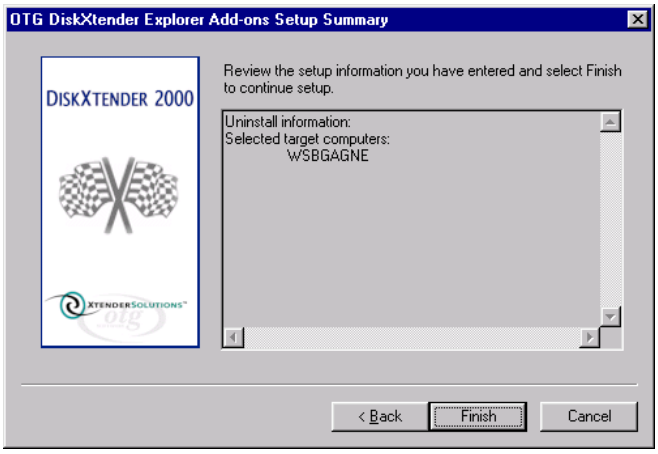
Figure 264: Explorer Add-ons Removal: Select Target Computers Page



9 Carefully review the list of target computers. Remove any computers in the list for which you do not want the Explorer Add-Ons uninstalled by selecting the computer and clicking Delete.

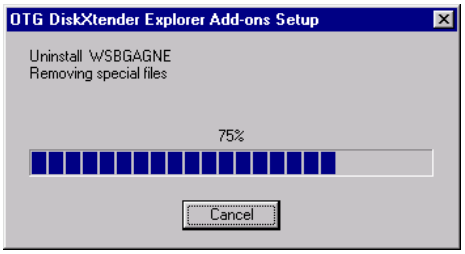
10 When the list of target computers for removing the Explorer Add-Ons is correct, click Next. The Summary page appears listing the target computers from which the Explorer Add-Ons will be removed.

Figure 265: Explorer Add-ons Removal: Summary Page



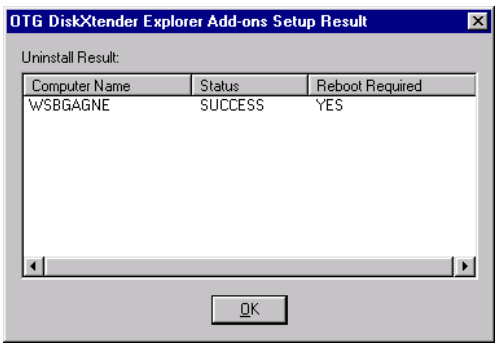
11 Click Finish to complete uninstalling the Explorer Add-ons. A progress bar appears indicating the completion percentage of the removal process. If you are uninstalling from multiple computers, separate progress bars will subsequently appear indicating the percentage complete for the program removal from each computer.

Figure 266: Explorer Add-ons Removal: Progress Bar



Any settings related to the Explorer Add-Ons in the Windows registry, all program files in the installation path, and the OTG DiskXtender Explorer Add-Ons program group/folder are removed. When uninstall is finished, the Explorer Add-Ons Setup Results dialog box appears, listing the results for each target computer specified.

Figure 267: Explorer Add-Ons Removal Results Dialog Box



12 Take note of any computers that need to be rebooted (or computers on which the uninstall failed). Click OK.

13 Restart each computer for which the Explorer Add-Ons Setup results dialog box indicates a reboot is required.

After restarting, uninstall is complete.

INDEX